

Department of
**MECHANICAL
ENGINEERING**

Annual Report 2018-2019



Department of Mechanical Engineering

The Hong Kong Polytechnic University

Hung Hom, Kowloon, Hong Kong

website: www.polyu.edu.hk/me



ANNUAL REPORT

2018-2019

Department of Mechanical Engineering
The Hong Kong Polytechnic University

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Department of Mechanical Engineering

As one of the founding departments of The Hong Kong Polytechnic University since 1937, the Department of Mechanical Engineering has been the forerunner of the vast evolvement of its field. Over the years, the Department has pioneered the rapid development in the following research areas:

- Advanced Materials and Processing
- Aerospace Engineering
- Clean Energy and Energy Storage
- Robotics and Control
- Sound and Vibration
- Thermofluids and Combustion

Enhancing and maintaining excellent teaching quality has always been the major goal of the Department. With the elite teaching team, students will gain professionally recognized qualifications at different levels from the training of programmes offering by the Department, including Doctorates, Master Degrees, and Bachelor Degrees in Mechanical Engineering, and Product Analysis and Engineering Design.

Strategically emphasize on applied research, the Department firmly believes that research is an integral part of academic life. It informs teaching and advances the frontiers of knowledge and technology. The Department's efforts in research contribute to lifting the competitiveness of industry and to provide possible solutions towards a better living in Hong Kong and in the world.

The Department is famous for its international focus and actively encourages collaborations with overseas institutions. To foster international collaboration, the Department has been very active in inviting internationally well-known academic figures to participate as guest lecturers and in organizing international conferences. The Department has also published numerous research reports on world-renowned publications. The Department facilitates international exchange programmes for students through a strong network with various partner institutions all over the world and provides a platform for students to acquire global horizons and invaluable experiences in their university lives.

Major Laboratories

Acoustic Laboratory
 Acoustic Wind Tunnel Laboratory
 Advanced Materials for Energy Conversion and Storage Laboratory
 Aeronautical Laboratory
 Biological Mechanics and Materials Laboratory
 Computational Aeroacoustics and Flow Physics Laboratory
 Corrosion and Surface Technology Laboratory
 Design Analysis Centre
 Dynamics Laboratory
 Fluid Mechanics Laboratory
 Heat Transfer and Combustion Laboratory
 Materials and Mechanics Technology Laboratory
 Measurement and Control Laboratory
 Nano- and Micro-Mechanics Laboratory
 Nano-scale Energy Conversion Devices and Physics Laboratory
 Product Testing and Analysis Centre
 Project Laboratory
 Smart Structures and Products Laboratory
 Thermal Science Laboratory
 Thermodynamics Laboratory
 Undergraduate Computational Laboratory
 Water Tunnel Laboratory
 Wind Tunnel Laboratory

Vision

To achieve excellence in education and research in the discipline of mechanical engineering with global outreach and impact.

Mission

To train future leaders, with creativity, broad vision, global outlook, and professional ethics for industry, academia, government and communities, who have sound knowledge in mechanical engineering with effective communication, analytical, and problem-solving skills.

To create knowledge and technologies through fundamental research and its applications in mechanical engineering to serve societal needs.

Head's Message



The Department of Mechanical Engineering is committed to providing a comprehensive and enjoyable learning experience for our students and a world-class environment for our faculty members to excel in their discovery and innovation. Underlying this mission is a prolonged effort to engage in education need and research growth. This report highlights a few of the many accomplishments of our faculty members and students in teaching and learning, and research over the academic year of 2018/19.

Teaching and Learning

At the core of our vision in enhancing students' interdisciplinary learning, the UGC-funded full-time undergraduate programme, the BEng (Hons) in Mechanical Engineering, will introduce four cutting-edge clusters namely "Aerospace Engineering", "Robotics and Autonomous Systems", "Environmental and Energy Engineering", and "Mechanics and Materials". For the first time in ME history, the BEng (Hons) in Product Analysis and Engineering Design will launch the "Cooperative Education" (Co-op) option for students to master knowledge through real-world experiential learning in professional and industrial setting.

With concerted effort by the department colleagues and students, we have moved forward on our programmes for quality assurance. Going through an in-depth review by the accreditation body in late 2018, all of our BEng programmes were successfully renewed the full accreditation for 5 years for all intake classes up to the academic year 2022/23 by the Hong Kong Institution of Engineers (HKIE).

Research and Consultancy

Our relentless efforts has retained the highest quality in a tremendous profound research outputs including journal/conference articles, books /book chapters and patents. Many of our research papers have been constantly cited and selected as featured highlights in prestigious international journals. Dr Zengbao JIAO co-authoring a paper on high-entropy alloys was published in top journal "Science". Prof. Guohua CHEN's article on technological breakthrough in layered lithium was published in high impact journal "Nature Energy". Dr Liang AN's novel fuel cell system design was featured as the cover page story in "International Journal of Energy Research". Dr Xingjian JING's research team's advanced energy harvesting technology was reported by well-recognized journal "Nano Energy". Dr Peng ZHANG's research team unveiling the secret of the flicking of diffusion flames was included in the leading journal in the field "Journal of Fluid Mechanics".

Our research reputation is further evidenced by the success in securing a number of highly competitive research grants. In the 2019/2020 results of grants from the Research Grants Council's General Research Fund (GRF) and

Early Career Scheme (ECS) announced in June 2019, five of our GRF proposals and one ECS were funded. Moreover, we have attained other external competitive funding e.g. Innovation and Technology Fund (ITF), National Science Foundation of China (NSFC), and Research Grants Council (RGC) Joint Research Scheme (JRS). The total external fund secured by the Department in 2018/2019 was over HK\$18 million. Amongst them, Prof. Fu Mingwang has been awarded RMB\$3 million for a key research project by NSFC. Prof. Zhou Li Min was funded over HK\$2.5 million by Beijing Aeronautical Science and Technology Research Institute of COMAC (Collaborative). Dr Choy Yatsze secured a funding over HK\$5.8 million from ITF University-Industry Collaboration Programme.

We continued to be recognized for our dedicated work as a partner with other institutions in the education, private and public sectors. Our research teams in a wide spectrum continued to build valuable links in Hong Kong, mainland China and overseas via consultancy work, industry collaborations and research collaborations, to further our goals in knowledge transfer.

Accomplishments and Highlights

In this academic year, our students and staff were awarded in various national and international competitions. It was terrific that a ME student team triumphed in the ASM Technology Award 2019. The team was awarded HK\$50,000 for scholarship and the Faculty received a donation of HKD100,000 being Champion institution. Another student team won the 1st Runner-up in the 2018 American Society of Mechanical Engineers (ASME) Student Design Competition (SDC) held in Pennsylvania, USA. A year two PhD student, Mr Xiaoqi ZHANG, won the prestigious Sir James Lighthill Award in the best student paper competition held in Hiroshima, Japan. Another PhD student, Mr Zhenbin GUO, got the Excellent Oral Award in the 2nd International Conference on Electrical Engineering and Green Energy (CEEGE 2019) in Roma, Italy.

Prof. Wallace LEUNG was lauded with the prestigious international IAAM (International Association of Advanced Materials) Medal 2019 in Sweden for his notable and professional achievements. Prof. Zhongqing SU has been appointed by the world's leading publisher Elsevier as the new Editor-in-Chief of the international journal "Ultrasonics".

What's more, this was an eventful year to remember. The Department hosted the 7th Asia-Pacific Workshop on Structural Health Monitoring, with approximately 260 participants from over 30 countries where internationally renowned scholars delivered plenary talks. We also hosted the 8th East Asia Mechanical and Aerospace Engineering Workshop, with approximately 100 participants from top-notch universities in the East Asia region. Furthermore, we co-organized the first-of-its-kind international Marine Robotics Forum in Hong Kong, in which international and local experts were invited to share their insights on marine robotics technologies.

Looking Ahead

The new academic year comes with opportunities and challenges. While many challenges remain, the opportunities seem equally bright.

Looking ahead, we will continue to capitalize on our strengths in teaching, research, knowledge transfer and service to the community.

Prof. SQ SHI

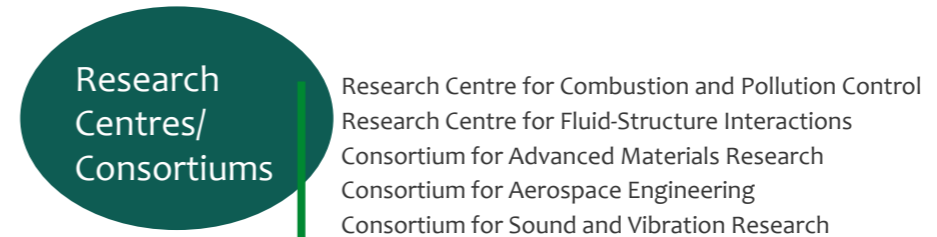
Head
Department of Mechanical Engineering

Our People

Our professional and passionate staff members, under the support from Departmental Advisory Committee and Academic Advisors, play a vital role in the substantial contributions made both individually and collectively towards the continuous development of the Department, the University and the community.



Department Structure



Advisory Committee

Chairman

Ir Dr Angus HW Cheung
Chief Executive Officer
Aerovision Technology Limited

Ex-officio Members

Prof SQ Shi
Chair Professor & Head
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Prof HC Man
Dean
Faculty of Engineering
The Hong Kong Polytechnic University

Members

Mr Richard CW Chan
Assistant Director
Engineering Services Branch 3
Electrical & Mechanical Services Department, HKSAR

Ir Ronald KW Cheng
General Manager
Technical and Engineering Services
MTR Corporation Limited

Ir Chris KC Cheung
Director, Generation Engineering
CLP Power Hong Kong Limited

Mr Dave TY Ho, JP
Assistant Director (Air Policy)
Environmental Protection Department, HKSAR

Mr Edmond Lai
Chief Digital Officer
Hong Kong Productivity Council

Dr HH Ruan
Assistant Professor
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Mr Banting WP Sze
Chairman and Chief Executive Officer
Freetech Road Recycling Technology (Holdings) Limited

Prof CY Wen
Professor & Associate Head
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Dr J Zhu
Associate Professor
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Overseas Members

Dr Cyrille Breard
The Noise and Emission Manager
Commercial Aircraft of China Ltd.

Prof Bing Li
Professor
Acting Dean of School of Mechanical Engineering
and Automation
Harbin Institute of Technology, Shenzhen

Prof Vigor Yang
Professor
School of Aerospace Engineering
Faculty of Engineering
Georgia Institute of Technology

Student Representatives

Mr Farhan Khalid
Full-time BEng Student
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Mr Andre Eccel Vellwock
Full-time PhD Student
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Secretary

Ms Lily Tam
Senior Executive Officer
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Assistant Secretary

Ms Joanne Cheng
Executive Officer
Department of Mechanical Engineering
The Hong Kong Polytechnic University

Academic Advisor

Departmental Academic Advisor

Prof. Teik C. Lim
Provost and Vice President for Academic Affairs
University of Texas at Arlington

Departmental Committee Chairman

Departmental Staffing Committee
Departmental Management Committee
Departmental Research Committee
Departmental Learning and Teaching Committee
Departmental Learning Outcomes Assessment Committee
Departmental Publicity Committee
Space Allocation Committee
Programme Committees
• Departmental Undergraduate Programmes Committee
• Departmental Postgraduate Programmes Committee
• MSc in ME Award Committee
Work-Integrated-Education Committee
International Exchange Committee
Departmental Health and Safety Committee

Chairman
Prof. SQ Shi
Prof. SQ Shi
Prof. CY Wen
Prof. ZQ Su
Prof. ZQ Su
Prof. CS Cheung
Prof. SQ Shi

Prof. ZQ Su
Dr P Zhang
Dr P Zhang
Prof. TL Chan
Dr Y Liu
Dr Curtis Ng

Research Centre/ Consortium Director

Research Centre for Combustion and Pollution Control
Research Centre for Fluid-Structure Interactions
Consortium for Advanced Materials Research
Consortium for Aerospace Engineering
Consortium for Sound and Vibration Research

Director
Prof. CS Cheung
Dr Y Liu
Prof. LM Zhou
Dr H Tang
Prof. L Cheng

Discipline Areas Group Leader

Control, Acoustics and Dynamics
Materials and Solid Mechanics
Thermofluids and Combustion

Group Leader
Prof. L Cheng
Prof. LM Zhou
Prof. Wallace Leung

Academic Staff

Head and Chair Professor of Mechanical Engineering	
SHI Sanqiang (Prof.) 石三強教授 BSc; MSc (USTB, China); PhD (McMaster); MHKSTAM; MMRS; MTMS; FHKIE	Metallic materials; Nuclear materials; Nanotechnology; Environmental degradation of materials; Computational materials design and modeling
Emeritus Professor	
SO Ming Cho Ronald (Prof.) 蘇銘祖教授 BSc(Hons); MEng; MA; PhD; DSc; Hon DEng; FWIF; FIMechE; FASME; MIAA; FRAeS; FAIAA	Turbulence modeling; Fluid-structure interaction; Flow-induced vibration; Direct aeroacoustics simulation; Lattice Boltzmann-type equation
TONG Timothy W. (Prof.) 唐偉章教授 BSc; MSc; PhD; FASME; FHKEng; JP	High performance computing of radiative heat transfer; Heat transfer in porous media; Energy conservation; Thermal insulation systems; Thermal control of aerospace systems; Thermal radiation; Heat transfer in fuel cells
Associate Vice President (Research Support), Otto Poon Charitable Foundation Professor in Smart and Sustainable Energy, and Chair Professor of Energy Conversion and Storage	
CHEN Guohua (Prof.) 陳國華教授 B.Eng. (Dalian University of Technology), M.Eng.; PhD (McGill), FHKIE, Fellow AIChE	Advanced electrode materials for energy storage; electrochemical technologies for energy and environmental applications; drying of high value products
Chair Professor of Mechanical Engineering	
CHENG Li (Prof.) 成利教授 BSc (Xi'an Jiaotong Univ.); DEA; Ph.D. (INSA, Lyon, France); FASA; FASC; FHKIE; FHKIOA; FIIAV; FIMechE	Noise and vibration control; Fluid-structure interaction; Damage detection and smart material/structure/products
Chair Professor of Innovative Products & Technologies	
LEUNG Woon Fong Wallace (Prof.) 梁煥方教授 BSc(Cornell U.); MSME(MIT); ScD(MIT); Fellow of ASME, HKIE, AFS and AICHE; Senior Member of AIAA; Member of ACS and SBE	Product innovation, research and development; Physicochemical hydrodynamics; Turbine cooling; Nanofiber technologies for health (wound healing), environment (filtration of nano-aerosols and purification of gaseous pollutants; water purification), and renewable energy (Dye Sensitized Solar Cells); Separation & filtration technologies; Biotechnology separation; Membrane separation and processes; Rheology of semi-fluids; Water and wastewater treatment; Centrifugation technologies; Centrifugal microfluidics for micro-reactor and cell culture; Interactive rehabilitation robotic system; Clinical decision support system; Cancer biomarker discovery

Visiting Chair Professor of Mechanical Engineering under the Distinguished Chair Professor Scheme	
ZHANG Tongyi (Prof.) 張統一教授 Master (USTB); PhD (USTB)	Materials science and engineering, and solid mechanics
Distinguished Honorary Professor of Materials Science and Engineering	
XU Qiang (Dr) Ph.D. (Osaka University); FRSC; Member of European Academy of Sciences (EURASC)	Materials chemistry; Energy storage and conversion; Porous materials (MOFs, carbons, etc); Nanoparticles; Catalysis; Fuel cells; Batteries; Supercapacitors; Hydrogen generation and storage
Associate Head and Professor	
SU Zhongqing (Prof.) 蘇眾慶教授 BSc (BUAA); MEng (BUAA); PhD (Syd.,)	Structural Health Monitoring (SHM); Wave Propagation; Sensors and Sensor Network; Non-destructive Evaluation (NDE); Smart Materials and Structures; Advanced Composite Materials
WEN Chih-Yung (Prof.) 溫志湧教授 BEng (National Taiwan University); MSc (Caltech, U.S.A.); PhD (Caltech, U.S.A.); AFAIAA; FHKIE	Aerodynamics of hypersonic vehicles; Supersonic combustion; Active flow control; Magnetic fluid flows; Fuel cell technologies
Professor	
CHAN Tat Leung (Prof.) 陳達良教授 BSME; MSME; PhD; Ir; Eur Ing; CEng; RPE; FASME; FHKIE; FIMechE; FSAE	Multiphase and multi-component complex systems with micro- and nanoscale; Aerosol science & technology; Transport and formation of nano/microparticles and gaseous pollutants; Combustion & emissions formation; On-road vehicle emission measurement, control and modelling techniques; Thermal-fluids science & engineering.
CHEUNG Chun Shun (Prof.) 張鎮順教授 BSc, MSc (H.K.U.); PhD (H.K.Poly.); CEng; RPE; MHKIE; MIMarE	Internal combustion engine; Engine emissions
FU Mingwang (Prof.) 傅銘旺教授 BEng; MEng (Xi'an Northwestern PolyU); PhD (National Univ. of Singapore)	Product design and development; CAD and CAE; Manufacturing technologies; Nano-processing of bulk materials and micro-realization of micro product/systems
ZHOU Limin (Prof.) 周利民教授 BEng; MEng (Harbin); PhD (Syd)	Nanomaterials and nanotechnology for energy conversions and storages; Recyclable and reusable high performance structural composites; Functional composites; Structure health monitoring technology

Associate Professor	
<p>CHOY Yat Sze (Dr) 蔡逸思博士 BEng; PhD (HK PolyU); MIOA</p>	<p>Sound induced vibration; Duct noise control; Building and room acoustics; Environmental noise measurement and control; Aeroacoustics; Sound Sources identification; Sound quality of product and its assessment; Soundscape study, planning and design</p>
<p>JING Xingjian (Dr) 景興建博士 Bsci (Zhejiang); MPhil & PhD (CAS); PhD (Sheffield)</p>	<p>Frequency domain methods for nonlinear systems; Nonlinear system identification and signal processing; Nonlinear sound and vibration control; Robotic systems—Analysis, Design & Control; Robust learning/control methods; Intelligent computing and optimization</p>
<p>LEUNG Chi Kin Randolph (Dr) 梁志堅博士 PhD; Senior MAIAA; MASME; MIED; MIOA; MHKIE; MHKIOA</p>	<p>Computational aeroacoustics and gas dynamics; Wind turbine aerodynamics; Flow-induced sound and structural vibration; Aviation science; HVAC compressor and system design; Product sound and vibration quality</p>
<p>LIU Yang (Dr) 劉陽博士 BSc(USTC); MEng(BUCT); PhD(Syd.); MHKIE</p>	<p>Biomechanics; CFD; Flow-induced vibration and thermal management</p>
<p>TANG Hui (Dr) 唐輝博士 BEng(Tsinghua); MEng (Tsinghua); PhD (Manchester)</p>	<p>Aerodynamics; Hydrodynamics; Active flow control; Fluid-structure Interaction; Multiphase flow</p>
<p>WONG Wai On (Dr) 黃偉安博士 BEng; MSc; PhD (HK PolyU); MIMechE; CEng; MHKIE</p>	<p>Laser diagnostics; Structural dynamics; Signal processing</p>
<p>YAO Haimin (Dr) 姚海民博士 BEng, MEng (Tsinghua); Dr.rer.nat.(Universitat Stuttgart)</p>	<p>Solid Mechanics (specialized in Fracture Mechanics and Contact Mechanics); Bio-inspired Mechanics and Materials; Advanced Energy Materials; Nanomechanics</p>
<p>ZHANG Peng (Dr) 張鵬博士 BSc (USTC); MSc (IMCAS); PhD (Princeton)</p>	<p>Theoretical and numerical combustion; Chemical kinetics; Droplet and spray dynamics; Rarefied gas dynamics</p>
<p>ZHENG Guangping (Dr) 鄭廣平博士 BBS., MS. (Sun Yat-sen); Ph.D. (Johns Hopkins)</p>	<p>Computational materials science; Mechanical properties of nanomaterials; Applications of nanomaterials in energy conversion and storage</p>
<p>ZHU Jie (Dr) 祝捷博士 BSc, MSc (Nanjing); PhD (Pennsylvania State)</p>	<p>Structured acoustic materials and metamaterials; Acoustic imaging technology and system; Piezoelectric material and acoustic transducers; Experimental acoustics</p>

Assistant Professor	
<p>AN Liang (Dr) 安亮博士 PhD (HKUST)</p>	<p>Thermofluid; Energy conversion and storage technologies; Advanced materials</p>
<p>CHU Kar Hang Henry (Dr) 朱嘉行博士 BAsC (Waterloo); MASc and PhD (Toronto)</p>	<p>Robotic manipulation; Vision-based control and automation; Micro-system design and Tissue engineering</p>
<p>JIAO Zengbao (Dr) 焦增寶博士 BSc (CUGB), MEng (USTB); PhD (CityU)</p>	<p>Advanced structural materials; High-temperature and high-strength alloys; Nanostructured alloys; Mechanical properties; 3D atom probe tomography</p>
<p>David NAVARRO-ALARCON (Dr) 毛大衛博士 PhD (CUHK)</p>	<p>Robotics</p>
<p>RUAN Haihui (Dr) 阮海輝博士 PhD (HKUST)</p>	<p>Solid Mechanics; Plasticity; Constitutive modeling; Amorphous Materials; Nanomaterials; Impact; Collision and Crashworthiness</p>
Teaching Fellow	
<p>TAM Wai Yin Eunice (Dr) 譚慧賢博士 BEng (HK PolyU); MEng (HK PolyU); PhD (UNO)</p>	<p>Composite and application; Composite manufacturing; Nanocomposite (carbon nanotube/polymer) structure</p>
<p>Anand VYAS (Dr) 阿倫韋華斯博士 BSc; MSc (R.D.V, India); MPhil (HKU); PhD (CityU HK)</p>	<p>Thin film; Nanomaterials materials; Materials characterization; Hard multilayer coatings and their mechanical & tribological properties; High temperature superconductivity</p>
Senior Instructor	
<p>TANG Wai Fong Elsa (Ir) 鄧慧芳工程師 MSc (HKU); MSc (Liverpool); BEng (Liverpool); MHKIE, CEng, MIMechE</p>	<p>Computer aided design; Computer aided engineering; Product design and management; Basic scientific computing; Supply chain management</p>

Administrative Support Staff

TAM Man Yee, Lily (Ms)	Leader, Senior Executive Officer
CHO Sau Yung, Karen (Ms)	Assistant Marketing Manager
CHENG Sze Ting, Joanne (Ms)	Executive Officer
YUEN Man Hei, Hilary (Miss)	Assistant Officer
LEUNG Lap Pun, Eric (Mr)	Executive Assistant
CHAN Bik Ki, Packy (Ms)	Clerical Officer II
LAI CHAN Sin Fan, Michelle (Mrs)	Clerical Officer II
NGAI Oi Ling, Irene (Miss)	Clerical Officer II
WONG Sin Hing, Merlin (Ms)	Clerical Officer II
WONG Kam Yan (Ms)	Clerk

Technical Support Staff

NG Chun, Curtis (Ir Dr)	Leader, Senior Technical Officer
CHAN Hau Tsang, Raymond (Mr)	Scientific Officer II
LEUNG Chi Kuen, Benny (Mr)	Technical Officer
NG Chun Hung, Stephen (Dr)	Technical Officer
TSANG Kwong Shing (Mr)	Technical Officer
WONG Kwok Wai (Mr)	Technical Officer
YUEN Ka On (Mr)	Technical Officer
TANG Kam Keung (Mr)	Technician
TSE Kwai Wa (Mr)	Assistant Scientific Officer
CHAN Cho Yan (Mr)	Assistant Technical Officer
MAN Ka Fung (Mr)	Assistant Technical Officer
YAN Chiu Hang (Mr)	Assistant Technical Officer
WOO Wai Chiu (Mr)	Senior Artisan

Staff Movement (1 July 2018 – 30 Jun 2019)

Endowed Professorship

Prof. GH CHEN was appointed as Otto Poon Charitable Foundation Professor in Smart and Sustainable Energy under the University Endowed Professorship Scheme

Promotion

Dr J Zhu was promoted to Associate Professor

New Appointment

Mr LP Leung, Executive Assistant
Mr CH Yan, Assistant Technical Officer



Research Personnel

Senior Research Fellow (Full-time)

CHEN Shuo (Dr) 陈硕 PhD, Xi'an Jiaotong Univ, China

Research Fellow (Full-time)

LAM Chi Yan Garret (Dr) 林志欣 PhD, The Hong Kong Polytechnic Univ, HK
LI Xinlei (Dr) 李新雷 PhD, Northwestern Polytechnical Univ, China
LIU Yang (Dr) 刘洋 PhD, Dalian Univ of Tech, China
XIA Xi 夏溪 MSc, Univ of Colorado at Boulder, USA
YANG Xianglong (Dr) 杨向龙 PhD, Univ of Sci & Tech of China, China
YU Yaoguang (Dr) 于耀光 PhD, Harbin Inst of Tech, China
ZHANG Haiming (Dr) 章海明 PhD, Shanghai Jiaotong Univ, China

Research Fellow (Part-time)

CHEUNG Yan Lung (Dr) 张人龙 PhD, The Hong Kong Polytechnic Univ, HK

Postdoctoral Fellow (Full-time)

CHENG Kui (Dr) 程魁 PhD, Harbin Engg Univ, China
CUI Liu (Dr) 崔柳 PhD, North China Electric Power Univ, China
DAI Honghua (Dr) 代洪华 PhD, Northwestern Polytechnical Univ, China
DONG Haowen (Dr) 董浩文 PhD, Beijing Jiaotong Univ, China
GAO Pengfei (Dr) 高鹏飞 PhD, Northwestern Polytechnical Univ, China
GU Zhongming (Dr) 顾仲明 PhD, Nanjing Univ, China
HAN Zhuo (Dr) 韩卓 PhD, Univ of Shanghai for Sci & Tech, China
HUANG Bin (Dr) 黄斌 PhD, Central South Univ, China
LIU Shuyuan (Dr) 刘殊远 PhD, The Hong Kong Polytechnic Univ, HK
LIU Tuo (Dr) 刘拓 PhD, The Hong Kong Polytechnic Univ, HK
LIU Yu (Dr) 刘宇 PhD, Central South Univ, China
QIN Xianying (Dr) 秦显营 PhD, Donghua Univ, China
REN Feng (Dr) 任峰 PhD, Northwestern Polytechnical Univ, China
SABBAGHI Aghil (Dr) PhD, The Hong Kong Univ of Sci and Tech, HK
SHEN Cheng (Dr) 沈承 PhD, Nanjing Univ of Aeronautics and Astronautics, China
TIAN Wenling (Dr) 田文龙 Doctor, Northwestern Polytechnical Univ, China
WANG Chenglei (Dr) 王成磊 PhD, Nanyang Technological Univ, Singapore
WANG Zhibo (Dr) 王志博 PhD, The Hong Kong Polytechnic Univ, HK
XIE Dan (Dr) 谢丹 PhD, Northwestern Polytechnical Univ, China
XU Wei (Dr) 徐伟 PhD, Northwestern Polytechnical Univ, China
XU Weifeng (Dr) 徐伟峰 PhD, Northwestern Polytechnical Univ, China

XU Yanfeng (Dr) 徐球鋒
YIN Huabing (Dr) 阴化冰
ZHANG Fei (Dr) 张菲
ZHU Yanan (Dr) 朱亚楠

PhD, Tongji Univ, China
PhD, Shandong Univ, China
PhD, Dalian Univ of Tech, China
PhD, Univ of Chinese Academy of Sciences, China

Postdoctoral Fellow (Part-time)

LIU Qiang (Dr) 刘強

PhD, The Hong Kong Univ of Sci and Tech, HK

Research Associate (Full-time)

BOUYX Marie Paule
CAO Shancheng (Dr) 曹善成
DING Zhiyi (Dr) 丁志义
FAN Ka Heng (Dr) 范嘉興
FANG Hongbin (Dr) 方虹斌
FENG Xiao (Dr) 冯骁
FENG Zhiguang (Dr) 冯志光
GAO Chuanqiang (Dr) 高传强
GAO Yao (Dr) 高尧
GUAN Ben (Dr) 關奔
KANJWAL Muzafar Ahmad (Dr)
LI Kaikai (Dr) 李鐸鏞
LI Qian (Dr) 李倩
LI Yehai (Dr) 李葉海
LIN Chen (Dr) 林晨
LIN Ji (Dr) 林驥
LIU Wenbo (Dr) 劉文博
LU Bo (Dr) 陸波
NIU Xiaohua (Dr) 牛晓花
SHAN Shengbo (Dr) 单胜博
TANG Liling (Dr) 唐利玲
TANG Xuefeng (Dr) 唐学峰
WANG Kai (Dr) 王凱
WANG Xu (Dr) 王旭
XIAO Zhihua (Dr) 肖知華
XU Qi (Dr) 胥奇
YIN Yue (Dr) 殷悅
ZHU Jiaming (Dr) 朱家明

Master, Institut National des Sciences Appliquees de LYON, France
PhD, Univ of Liverpool, UK
PhD, Univ of Sci & Tech Beijing, China
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Tongji Univ, China
PhD, South China Univ of Tech, China
PhD, The Univ of Hong Kong, HK
PhD, Northwestern Polytechnical Univ, China
PhD, The Hong Kong Univ of Sci and Tech, HK
DEng, Univ of Sci & Tech of China, China
PhD, Chonbuk National Univ, Korea
PhD, The Hong Kong Univ of Sci and Tech, HK
PhD, Tongji Univ, China
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Xi'an Jiaotong Univ, China
PhD, Zhejiang Univ, China
PhD, Sichuan Univ, China
PhD, The Hong Kong Polytechnic Univ, HK
PhD, The Hong Kong Univ of Sci and Tech, HK
PhD, The Hong Kong Polytechnic Univ, HK
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Univ of Sci & Tech Beijing, China
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Lanzhou Univ, China
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Nanjing U of Aeronautics and Astronautics, China
PhD, Ruhr-Univ Bochium, Germany
PhD, The Hong Kong Univ of Sci and Tech, HK

Research Associate (Part-time)

WONG Chun Nam (Dr) 黃振南

PhD, Univ of Maryland, Baltimore Country, US

Research Assistant (Full-time)

BAI Zhaowen 白肇文
CAI Zhongyang (Dr) 蔡正阳
CAO Yupeng (Dr) 曹宇鵬
CHAU Yuen Ting Rachel 周沅亭
CHEN Fei 陳飛
CHEN Zongnan 陳宗南
FANG Jieyichen 方洁怡晨
FU Jimin (Dr) 傅济民
FU Jin 傅进
GAO Chuanqiang (Dr) 高传强
GOMEZ DOMINGUEZ, Domingo
HAO Jiaao (Dr) 郝佳傲
JIANG Guoqing (Dr) 蒋国庆
JIANG Xiao 蒋潇
JIANG Yazhong (Dr) 姜亞中
JUAN Yuhsuan 阮于軒
LEE Yeeting 李宜庭
LEI Yuanpeng 雷源鵬
LIANG Yu 梁煜
LIU Mei (Dr) 刘梅
LUO Jiannan 罗建南
MA Jun 马俊
MUDDASSIR Muhammad
PAN Shaopeng (Dr) 潘少鵬

MPhil, The Hong Kong Univ of Sci and Tech, HK
PhD, Beihang Univ, China
PhD, Jiangsu Univ, China
BEng, The Hong Kong Polytechnic Univ, HK
BEng, Shenyang Aerospace Univ, China
MSc, The Hong Kong Polytechnic Univ, HK
MSc, The Hong Kong Polytechnic Univ, HK
PhD, The Hong Kong Polytechnic Univ, HK
MEng, Northeastern Polytechnical Univ, China
PhD, Northwestern Polytechnical Univ, China
Bachelor, Escuela Tecnica Superior de Ingenieria, Spain
PhD, Beihang Univ, China
PhD, Beijing Univ of Tech, China
BEng, Wuhan Univ of Sci & Tech, China
PhD, Beihang Univ, China
MSc, National Taipei Univ of Technology, Taiwan
MSc, National Taipei Univ of Technology, Taiwan
Master, Chongqing Univ, China
Bachelor, Shandong Univ, China
PhD, Univ of Sci & Tech of China, China
BSc, Shanghai Jiaotong Univ, China
BEng, Northeastern Polytechnical Univ, China
Master, Beijing Inst of Tech, China
PhD, Shandong Univ, China

SHEN Lu (Dr) 沈路
SHI Lisong (Dr) 時立松
SU Jiahui (Dr) 苏嘉輝
SUN Xiaofeng (Dr) 孙晓峰
TAI Junfei 郜俊飞
WANG Jin 王晋
WEI Anran 危安然
XUE Xiaopeng (Dr) 薛晓鹏
YIN Hiu Man (Dr) 葉曉敏
YU Dehai (Dr) 于德海
ZHANG Guoxin 张国新
ZHANG Hao (Dr) 張浩
ZHANG Mao (Dr) 張茂
ZHAO Rui (Dr) 趙瑞
ZHAO Wen 赵雯
ZHAO Zhao 趙召
ZHENG Xiucheng (Dr) 鄭修成
ZHOU Bingchen 周冰晨
ZHOU Qi 周齐

PhD, The Hong Kong Polytechnic Univ, HK
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Guangdong Univ of Tech, China
PhD, Northeast Petroleum Univ, China
BEng, Nanjing U of Aeronautics and Astronautics, China
Bachelor, Southwest Jiao Tong Univ, China
MSc, Shanghai Jiaotong Univ, China
PhD, Nagoya Univ, Japan
PhD, The Chinese Univ of Hong Kong, HK
PhD, The Hong Kong Polytechnic Univ, HK
Master, Shandong Univ, China
PhD, The Hong Kong Polytechnic Univ, HK
PhD, Huazhong Univ of Sci & Tech, China
PhD, Beihang Univ, China
Master, Donghua Univ, China
Bachelor, Ocean Univ of China, China
PhD, Nankai Univ, China
MEng, Univ of Sci & Tech Beijing, China
BEng, Shenyang Aerospace Univ, China

Research Assistant (Part-time)

CHOI Ka Yuk 蔡家鈺
CHOW Man Kiu 周文翹
JIANG Bailun 姜百倫
YU Ho Man 余浩文

Bachelor, The Hong Kong Polytechnic Univ, HK
BEng, The Hong Kong Univ of Sci and Tech, HK
BEng, The Hong Kong Polytechnic Univ, HK
BEng, The Hong Kong Polytechnic Univ, HK

Project Assistant (Part-time)

BAI Jiafeng 白佳峰
KWOK Siu Lun 郭驥麟
YIN, Jason Dean-chen 尹定晟

Master, The Education Univ of HK, HK
Master, The Hong Kong Polytechnic Univ, HK
Master, The Education Univ of HK, HK

Intern (Full-time)

CHANGPHOO Kornchawan (Ms)
GODZINSKI Konrad Piotr
LUKASIEWICZ Aneta (Ms)
MARCZEWSKI Mateusz Jan
NIKOLOVA Iva (Ms)
SAITO Manabu
STUFF Christian

Student, Thammasat University, Thailand
Student, Lodz Univ of Technology, Poland
Student, Warsaw Univ of Technology, Poland
Student, Poznan Univ of Technology, Poland
Student, Ss Cyril and Methodius Univ, Skopje
Student, Tokyo City Unit, Japan
Student, RWTH Aachen Univ, Germany

PhD Student (Full-time)

AHMAD Shakeel
AHMADIGHADIKOLAEI Meisam
AI Chunhui 艾春晖
ANSARI Talha Qasim
ARIF Muhammad Irsalan
BIAN Jing 边菁
CAO Wuxiong 曹武雄
CHEN Long 陳龙
CHEN Shengyang 陈晟洋
CHI Tianxi 迟天玺
CUI Jingyu 崔靖渝
CUI Zhenxi 崔珍钰
DING Haoqing 丁昊青
DUAN Ran 段然
DUONGTHIPHEWA Anchalee
ECCEL VELLWOCK Andre
ESAN Oladapo Christopher
FAN E 范愕
FAN Lei 范磊
FU Jimin 傅济民
FU Yu 傅宇
GAO He 郜贺
GAO Yang 高陽
GUO Zhenbin 郭鎮斌
HAMEED Imran

MEng, Xi'an Jiaotong Univ, China
MEng, Aligarh Muslim Univ, India
MSc, Shanghai Jiaotong Univ, China
MEng, North China Electric Power Univ, China
MSc, Air Univ, Pakistan
MEng, Tongji Univ, China
Master, Central South Univ, China
MSc, The Hong Kong Polytechnic Univ, HK
Master, Universitat Siegen, Germany
MSc, Univ of Sheffield, UK
MEng, Zhejiang Sci-Tech Univ, China
MSc, The Hong Kong Polytechnic Univ, HK
Master, Harbin Inst of Tech, China
Master, Univ of Burgundy, France
MEng, Xi'an Jiaotong Univ, China
MSc, Politecnico di Milano, Italy
MSc, Cranfield Univ, UK
MSc, Univ of Chinese Academy of Sciences, China
MEng, Yanshan Univ, China
BEng, Zhejiang Univ, China
Master, East China Univ of Sci & Tech, China
Master, Nanjing Univ, China
MEng, Beihang Univ, China
MEng, The Hong Kong Polytechnic Univ, HK
BSc, Univ of Engg & Technology, Lahore, Pakistan

HE Chengming 何成明
 HU Jing 胡菁
 HU Zhongyu 胡中雨
 HUA Yingyu 华颖钰
 HUANG Guangyuan 黄光遠
 HUANG Kaicheng 黄凱程
 IMTIAZ Sumair
 JIANG Xiao 蒋潇
 LAI Jiewen 賴捷文
 LI Boyang 李博揚
 LI Dongfang 李東方
 LI Feilong 李飞龙
 LI Guangzhe 李广喆
 LI Jie 李洁
 LI Jingying 李晶莹
 LI Meng 李蒙
 LI Quankun 李全坤
 LI Wenting 李文婷
 LI Yehai 李葉海
 LI Yun 李云
 LI Zhengchao 李正超
 LI Zhengtong 李政桐
 LIANG Shanjun 梁善军
 LIAO Yaozhong 廖耀仲
 LIN Dongmei 林冬梅
 LIU Hongmei 劉紅梅
 LIU Mingran 劉銘然
 LIU Shuhong 劉書泓
 LIU Tuo 劉拓
 LO Kin Shing, Kenneth 盧健誠
 LONG Tiehan 龙铁汉
 LU Mingzhen 路明臻
 LYU Linlong 吕林龙
 MA Li 馬丽
 MA Wanyu 马婉玉
 MUDDASSIR Muhammad
 NG Ming To 吳銘濤
 PAN Zhefei 潘哲飞
 PIAO Jinli 朴金丽
 QADRI Muhammad Nafees Mumtaz
 SHAN Shengbo 单胜博
 SU Xiangyu 苏翔宇
 SU Yiyin 苏义印
 SUN Bo 孫博
 SUN Jingxuan
 SUN Qiangqiang 孫強強
 SUN Ruqi 孙汝奇
 TIAN Xudong 田旭东
 ULLAH Sana
 UY Chun Kit 黃駿傑
 WANG Jianbiao 王建彪
 WANG Jingwei 王靜威
 WANG Kai 王凱
 WANG Qian 王騫
 WANG Shu 王庶
 WANG Yafeng 王亚峰
 WANG Zhaokun 王兆坤
 WEI Long 魏龙
 WEN Fuzhen 温福祯
 WEN Weisong 文伟松
 WU Di 吳迪
 XIAO Biao 向彪
 XIONG Jie 熊杰
 XU Lei 许磊
 YANG Haopeng 楊昊澎
 YANG Jianwei 杨建伟
 YANG Juntan 楊君坦

MEng, Huazhong Univ of Sci & Tech, China
 MEng, Central South Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, Nanjing Univ of Aeronautics and Astronautics, China
 BEng, Tongji Univ, China
 MSc, The Chinese Univ of HK, HK
 Master, Univ of Jinan, China
 MEng, Wuhan Univ of Sci & Tech, China
 BEng, Wuhan Univ of Sci & Tech, China
 MEng, Northwestern Polytechnical Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, Chongqing Univ, China
 Master, Harbin Inst of Tech, China
 MEng, Tianjin Univ, China
 Master, Harbin Inst of Tech, China
 MEng, Beijing U of Tech, China, China
 MEng, Northwestern Polytechnical U, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, Nanjing Univ of Aeronautics and Astronautics, China
 MEng, South China Normal Univ, China
 MEng, Harbin Inst of Tech, China
 MEng, Huazhong Univ of Sci & Tech, China
 MEng, Harbin Engineering Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 Master, Beijing Univ of Chemical Tech, China
 MEng, Nanjing Univ of Aeronautics and Astronautics, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MSc, The Univ of Sheffield, UK
 MSc, China Univ of Petroleum, China
 BS, Colorado School of Mines, US
 MEng, Univ of Sci & Tech, China
 MEng, Jiangsu Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, Wuhan Univ of Tech, China
 MEng, Harbin Inst of Tech, China
 MSc, Beijing Inst of Tech, China
 BEng, The Hong Kong Polytechnic Univ, HK
 MEng, Harbin Inst of Tech, China
 MEng, Beijing Univ of Tech, China
 MSc, National Univ of Sci and Tech, Pakistan
 MEng, Nanjing Univ of Aeronautics and Astronautics, China
 MSc, The Hong Kong Univ of Sci and Tech, HK
 MSc, The Hong Kong Polytechnic Univ, HK
 BEng, Tongji Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 ME, South China Normal Univ, China
 MEng, China Univ of Petroleum (East China), China
 MEng, Univ of Chinese Academic of Science, China
 MSc, Univ of Peshawar, Pakistan
 BEng, The Hong Kong Univ of Sci and Tech, HK
 MEng, Lanzhou Univ, China
 Doctorate, Harbin Inst of Tech, China
 MEng, Beihang Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MSc, Peking Univ, China
 Master, Harbin Inst of Tech, China
 MEng, Beijing Univ of Technology, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, China Agricultural Univ, China
 MEng, Northwestern Polytechnical Univ, China
 MEng, Beihang Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 Master, Nanjing Univ of Aeronautics and Astronautics, China
 BEng, The Hong Kong Polytechnic Univ, HK
 MEng, Xiamen Univ, China
 MEng, Beihang Univ, China

YANG Tao 楊濤
 YANG Weiping 杨维平
 YANG Xiongbin 杨雄斌
 YIN Qifang 殷其放
 ZAHRA Omar Ibn Elkhatib Abdallah
 Abdelkader Elkelay
 ZHANG Dawei 張大尉
 ZHANG Guohao 張國豪
 ZHANG Linli 張林立
 ZHANG Xiaoqi 張曉奇
 MEng, Tianjin Univ, China
 ZHAO Fuwang 赵福旺
 ZHAO Liangjing 赵梁婧
 ZHENG Junyuan 郑钧元
 ZHOU Guichen 周冰晨
 ZHOU Pengyu 周鹏宇
 ZHOU Quan 周全
 ZHOU Tong 周桐
 ZHOU Weifeng 周伟峰
 ZHOU Zeqi 周泽齐
 ZHU Xuren 朱旭仁
 ZHU Yinggang 朱迎港

MEng, Univ of Chinese Academy of Sciences, China
 MEng, Xiamen Univ, China
 MEng, Xi'an Jiaotong Univ, China
 MEng, Univ of Chinese Academy of Sciences, China

MSc, Egypt-Japan Univ of Sci & Tech, Egypt
 BEng, China Univ of Petroleum, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MSc, The Hong Kong Polytechnic Univ, HK

MEng, Beijing Univ of Tech, China
 MSc, The Univ of Sheffield, UK
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, Univ of Sci & Tech Beijing, China
 Bachelor, Harbin Inst of Tech, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MSc, The Hong Kong Polytechnic Univ, HK
 MEng, Univ of Toronto, Canada
 MSc, Tianjin Univ, China
 MEng, Huazhong Univ of Sci and Tech, China
 BEng, Southern Univ of Sci & Tech, China

PhD Student (Part-time)

CHAN Ying Ngai 陳英毅
 CHAN Yui Ho 陳銳豪
 FAN Ka Heng 范嘉興
 LAM Ka Hei 林家熙
 LI Qian 李倩
 LIU Yao 劉堯
 LU Bo, Daniel 陸波
 MA Hei Lam 馬曦嵐
 MAK Yi Wah, Eva 麥浣華
 ZHANG Hao 張浩

MSc, The Univ of Hong Kong, HK
 BEng, The Hong Kong Polytechnic Univ, HK
 BEng, The Hong Kong Polytechnic Univ, HK
 BEng, The Hong Kong Polytechnic Univ, HK
 BEng, Tongji Univ, China
 MSc, The Hong Kong Polytechnic Univ, HK
 MSc, The Hong Kong Polytechnic Univ, HK
 BEng, The Hong Kong Polytechnic Univ, HK
 MSc, Washington Univ in Saint Louis, US
 MSc, The Hong Kong Polytechnic Univ, HK

MPhil Student (Full-time)

CHANG Ching Wei 張晉璋
 CHEN Zongnan 陳宗南
 LIN Jiajie 林家杰
 LIU Yutong 刘雨桐
 SHI Xingyi 石星逸

BSc, Yuan Ze Univ, Taiwan
 MSc, The Hong Kong Polytechnic Univ, HK
 BEng, The Hong Kong Polytechnic Univ, HK
 Bachelor, China Univ of Geosciences (Wuhan), China
 Bachelor, Univ of Electronic Sci & Tech of China, China

MPhil Student (Part-time)

HOU Ruoyang 侯若洋

BEng, The Hong Kong Polytechnic Univ, HK

Honours & Awards

(1 July 2018 – 30 Jun 2019)

Prof. LEUNG Woon Fong, Wallace

- IAAM Medal by International Association of Advanced Materials, Sweden
- 1st Runner Up of 2019 Environmental Paper Award by the Hong Kong Institution of Engineers (HKIE)

Prof. SU Zhongqing

- Faculty of Engineering Research Grant Achievement Award 2017/2018

Prof. WEN Chih-yung

- Faculty of Engineering Research Grant Achievement Award 2017/2018
- Faculty of Engineering Outstanding Award in Teaching (Individual) 2017/2018

Dr JING Xingjian

- Faculty of Engineering Merit Award in Research and Scholarly Activities (Individual) 2017/2018

Professional Services

Prof. CHAN Tat Leung

- Chairman cum Editor-in-Chief, The Hong Kong Institution of Engineers Transactions Committee
- Member, Appeal Board Panel under Builders' Lifts and Tower Working Platforms (Safety) Ordinance (Chapter 470), Development Bureau, The Government of the Hong Kong Special Administrative Region
- Member, Appeal Board Panel under Gas Safety Ordinance (Chapter 51), Environment Bureau, The Government of the Hong Kong Special Administrative Region
- Specialist, Engineering, and Science & Technology Disciplines of The Hong Kong Council for Accreditation of Academic & Vocational Qualifications (up to Dec 2018)
- Honorary Chair, Society of Automotive Engineers International - Hong Kong Section
- Section Vice Chair, American Society of Mechanical Engineers - Hong Kong Section (up to Jun 2019)
- Section Chair, American Society of Mechanical Engineers - Hong Kong Section (from Jun 2019)
- Ex-officio Member, Learned Society Board of The Hong Kong Institution of Engineers

Prof. CHEN Guohua

- President, Asia-Pacific Confederation of Chemical Engineering
- Vice President, World Chemical Engineering Council
- Associate Director, Drying Division, The Chemical Industry & Engineering Society of China
- Executive Committee Member, The Chemical Industry & Engineering Society of China
- Member, Energy Storage Division, The Chemical Industry & Engineering Society of China
- Member, International Advisory Panel, The 10th World Congress of Chemical Engineering, Barcelona

Prof. CHENG Li

- President, Hong Kong Society of Theoretical and Applied Mechanics
- Director, International Institute of Acoustics and Vibration (IIAV)
- Director, International Institute of Noise Control Engineering (I-INCE)
- Member, The International Steering Committee, Asia-Pacific Vibration Conference
- Member, Future Congress Technical Committee, International Institute of Noise Control Engineering (I-INCE)
- Member, Scientific Advisory Board, Research Center for Metropolitan Environmental Noise and Vibration Control, Shanghai Academy of Environmental Sciences, China
- Advisor, The AMSS-PolyU Joint Research Institute for Engineering and Management Mathematics

- Member, The Panel on Engineering and Science, The University of Macau
- Member, The Noise Control Appeal Board Panel, Secretary for the Environment, HKSAR
- Member, The Noise Technical Briefing Group, Airport Authority Hong Kong
- Member, Expert Panel, Automotive Parts and Accessory Systems R&D Centre

Prof. CS Cheung

- Member, Air Pollution Control Appeal Board Panel
- Member/Advisor, Steering Committee for Pilot Green Transportation Fund, HKEPD
- Member, Electric Bus Task Force, HKEPD
- Member, Hybrid Bus Task Force, HKEPD
- Member, International Organizing Committee of the International Conference on Combustion and Energy Utilization (Formerly known as Asia Pacific International Symposium on Combustion and Energy Utilization)

Prof. FU Mingwang

- Advisory Board Member, The International Journal of Advanced Manufacturing Technology

Prof. LEUNG Woon Fong Wallace

- Engineering Panel Member (specialize in Mech. & Environmental), The Research Grants Council
- Chairperson, International Delegation on Filtration

Prof. WEN Chih-Yung

- Vice Chair, Technical Committee of Fluid Mechanics, Fluid Engineering Division (FMTC, FED), ASME
- Member-at-large of EC, HKSTAM

Prof. SU Zhongqing

- Secretary General, The Hong Kong Society of Theoretical and Applied Mechanics
- Vice President, Equipment Structural Health Monitoring and Prognostics Branch of China Instrument and Control Society (CSHMP)
- Steering Committee Member, European Workshop on Structural Health Monitoring
- Scientific Committee Member, Asia-Pacific Workshop on Structural Health Monitoring
- International Organizing Committee Member, SPIE Conference Series on Smart Structures/NDE (Health Monitoring of Structural and Biological Systems)
- International Technical Committee Member, American Society of Mechanical Engineers (ASME) Conference Series on Non-destructive Evaluation, Diagnosis, and Prognosis Division
- International Scientific Committee Member, International Conference Series on Structural Health Monitoring and Integrity Management (ICSHMIM)

Prof. ZHOU Limin

- Vice President of Chinese Society for Composite Materials and a member of Engineering Panel, Hong Kong Research Grants Council
- Engineering Panel Member (specialize in Materials Sciences and Engineering), The Research Grants Council

Dr CHOY Yat Sze

- Member, Energy Efficiency Appeal Board Panel, Electrical and Mechanical Services Department, HKSAR

Dr LEUNG Chi Kin Randolph

- Advisory Committee Chair, American Society of Mechanical Engineers – Hong Kong Section

Dr WONG Wai On

- Member, Pressure Equipment Advisory Committee, Boilers and Pressure Vessels Authority, HKSAR

Dr YAO Haimin

- EC member, Hong Kong Society of Theoretical and Applied Mechanics
- Vice-chair, 2019 Gordon Research Conference on Nano-mechanical Interface

Fellowships

Prof. CHAN Tat Leung

- Fellow of American Society of Mechanical Engineers (FASME)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of The Institution of Mechanical Engineers (FIMechE)
- Fellow of Society of Automotive Engineers International (FSAE)

Prof. CHENG Li

- Fellow of Acoustical Society of America (FASA)
- Fellow of Acoustical Society of China (FASC)
- Fellow of International Institutes of Acoustics and Vibration
- Fellow of The Hong Kong Institute of Acoustics (FHKIOA)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of The Institution of Mechanical Engineers (FIMechE)

Prof. LEUNG Woon Fong Wallace

- Fellow of Hong Kong Academy of Engineering Sciences (FHKAES)
- Fellow of American Society of Mechanical Engineers (FASME)
- Fellow of American Institute of Chemical Engineers (FAICHE)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of American Filtration & Separations Society (FAFS)

Prof. LEUNG Chun Wah (retired in Dec 2018)

- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of Institute of Marine Engineering (FIMarEST)
- Fellow of The Institution of Mechanical Engineers (FIMechE)

Prof. SHI Sanqiang

- Fellow of The Hong Kong Institution of Engineers (FHKIE)

Prof. SU Zhongqing

- Fellow of The Hong Kong Institution of Engineers (FHKIE)

Prof. WEN Chih-Yung

- Associate Fellow of The American Institute of Aeronautics and Astronautics (AFAIAA)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)

Journal Editorships

Prof. CHAN Tat Leung

- Editor: Aerosol and Air Quality Research, Taiwan Association for Aerosol Research
- Editor-in-Chief: The Hong Kong Institution of Engineers Transactions, HKIE / Taylor & Francis
- Editorial Advisory Board Member: Flow, Turbulence and Combustion, Springer

Prof. CHEN Guohua

- Editor, Separation and Purification Technology, Elsevier
- Associate Editor, Chinese Journal of Chemical Engineering, Elsevier
- Subject Editor, Process Safety and Environmental Protection - Official Journal of the European Federation of Chemical Engineering: Part B, Elsevier

Prof. CHENG Li

- Deputy Editor-in-Chief and Receiving Editor, Journal of Sound and Vibration, Elsevier
- Associate Editor: The Journal of the Acoustical Society of America, IOP publishing
- Associate Editor: Structural Health Monitoring, An international Journal. SAGE Ltd. Science
- Editorial Board Member: International Journal of Applied Mechanics, Imperial College Press
- Editorial Board Member: Advances in Aircraft and Spacecraft Science, An International Journal. Techno Press
- Editorial Board Member: International Journal of Mechanics and Solids
- Editorial Board Member: Vibration, MDPI, Switzerland
- Editorial Board Member: Acoustics, MDPI, Switzerland
- Editorial Board Member: International Journal of Dynamics of Fluids
- Editorial Board Member: ACTA ACUSTICA SINICA
- Editorial Board Member: Chinese Journal of Acoustics
- Advisory Board Member: ASME Transactions: Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems

Prof. FU Ming Wang

- Editorial Board Member: International Journal of Plasticity, Elsevier
- Editorial Board Member: Materials & Design, Elsevier
- Editorial Board Member: International Journal of Damage Mechanics, SAGE
- Editorial Board Member: International Journal of Advanced Manufacturing Technology, Springer
- Editorial Board Member: Chinese Journal of Mechanical Engineering-English, Springer
- Editorial Board Member: Manufacturing Review, EDP Sciences
- Editorial Board Member: Advances in manufacturing, Springer
- Editorial Board member: Chinese Journal of Mechanical Engineering-Chinese, Springer
- Editorial Board member: International Journal of Lightweight Materials and Manufacture, Ke Ai
- Editorial Board member: International Journal of Computer Aided Engineering and Technology, Inderscience Publishers

Prof. LEUNG Woon Fong Wallace

- Editorial Board Member: Journal of Separation and Purification Technology, Elsevier

Prof. SHI Sanqiang

- Associate Editor: Science of Advanced Materials, American Scientific Publishers
- Associate Editor: Journal of Nanoscience and Nanotechnology, American Scientific Publishers
- Associate Editor: Journal of Computational and Theoretical Nanoscience, American Scientific Publishers
- Editorial Board Member: International Journal of Minerals, Metallurgy and Materials, Elsevier

Distinguished Lecture / Keynote Speech at International Conference / Symposium

Prof. SU Zhongqing

- Editor-in-Chief: Ultrasonics, Elsevier
- Subject Editor: Journal of Sound and Vibration, Elsevier
- Associate Editor: Structural Health Monitoring: An International Journal, SAGE
- Associate Editor, ASME Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems, ASME
- Associate Editor: Structural Engineering and Mechanics: An International Journal, Techno-Press
- Associate Editor: Coupled Systems Mechanics, Techno-Press
- Associate Editor: Structural Monitoring and Maintenance: An International Journal, Techno-Press
- Editorial Board Member: Aerospace

Prof. WEN Chih-Yung

- Associate Editor: The American Institute of Aeronautics and Astronautics (AIAA) Journal, SCI
- Editor: Shock Waves - An International Journal on Shock Waves, Detonations and Explosions

Prof. ZHOU Limin

- Editor-in-Chief: Composites Communications, Elsevier

Dr CHOY Yat Sze

- Editorial Board Member: Journal of Acoustics

Dr JING Xingjian

- Associate Editor & Editorial Board Member: Mechanical Systems and Signal Processing, Elsevier
- Technical Editor: IEEE/ASME Transactions on Mechatronics, IEEE
- Editorial Board Member: The Scientific World Journal, Hindawi Publishing Corporation
- Editorial Board Member: International Journal of Mechanic Systems Engineering, American V-King Scientific Publishing
- Editorial Board Member: Modern Mechanical Engineering, Scientific Research Publishing Inc., Scientific Research Publishing Inc.

Dr LEUNG Chi Kin Randolph

- Associate Editor in Chief: Journal of Technical Acoustics
- Editorial Board Member: Engineering Applications of Computational Fluid Mechanics
- Editorial Board Member: Advances and Applications in Fluid Mechanics

Dr David NAVARRO-ALARCON

- Associate Editor: Frontiers in Robotics and AI, Specialty Section on Soft Robotics

Dr WONG Wai On

- Associate Editor: The Hong Kong Institution of Engineers (HKIE) Transactions
- Editorial Board Member: The Scientific World Journal, Hindawi Publishing Corporation
- Editorial Board Member: ISRN Mechanical Engineering, Hindawi Publishing Corporation
- Editorial Board Member: The International Journal of Mechanical Systems Engineering, American V-King Scientific Publishing

Prof. CHEN Guohua

- "New Insight of NaLiFePO₄F as a High Voltage Cathode Material for Lithium Ion Battery", The 235th ECS Conference, 26 -30 May 2019, Dallas, Texas, USA.
- "Hybrid Freestanding Cathode Paired with an Ultrathin Tortech Paper Interlayer for High Areal-Loading Li-S Batteries", 2019 International Conference on Electrochemical Energy system, 26 Mar – 1 Apr 2019, Hangzhou, China.

Prof. CHENG Li

- "Non-linear Guided Waves for Incipient Structural Damage and Material Degradation Monitoring", 16th International Conference of Condition Monitoring and Machinery Failure Prevention Technologies. 25-27 June 2019, Glasgow, Scotland, UK.
- "Recent Advances in Acoustic Black Hole Research", Congress of Shanghai Society of Mechanics, 26 May 2019, Shanghai, China.
- "Structural Wave Manipulation through Acoustic Black Holes", 13th International Conference on Recent Advances in Structural Dynamics (RASD2019), 15-17 April 2019, Lyon, France.
- "Non-linear Guided-wave-based SHM: Characterization, Separation and Mitigation of Non-linear Sources", 4th International Conference on Structural Health Monitoring & Integrity Management, 21-23 October 2018, Hangzhou, China.
- "In-situ Sound Absorptions of Micro-Perforated Panels", 6th Forum on Vibration and Noise Control of Equipment, 12-15 October 2018, Harbin, China.
- "Sound Absorption of Micro-Perforated Panels in Complex Vibroacoustic Environment", 47th International Congress and Exposition on Noise Control Engineering (Inter-Noise 2018), 26-29 August 2018, Chicago, USA.

Prof. FU Mingwang

- "Size Effect in Manufacturing and Material Science", The 9th East Asia Mechanical and Aerospace Engineering Workshop, 30 May – 1 Jun 2019, Seoul, Korea.
- "Design and Development of Multi-Scaled Metal Forming Products Aided by Finite Element Simulation", The 4th International Forum of Advanced Manufacturing Technology and Equipment, 20-25 Oct 2018, Chengdu, China.
- "A Review of progressive and Compound Forming of Bulk Microparts by Using Sheet Metals", The 5th International Conference on New Forming Technology, 18-22 Sep 2018, Bremen, Germany.
- "Study on the enhanced superplasticity of Mg-Li based alloy by a stepped deformation method", 13th International Conference on superplasticity in advanced materials, 19-22 Aug 2018, St. Petersburg, Russia.
- "Multi-scaled metal formed product design and development aided by numerical simulation", The Youth Academic Forum of Plastic Forming 2018, 27 Jul – 1 Aug 2018, Qinhuangdao, China.

Distinguished
Lecture /
Keynote Speech

at International Conference / Symposium

Prof. LEUNG Woon Fong Wallace

- "Graphene and 2D materials for energy and environment", IAAM Conference, 11-13 Jun 2019, Stockholm, Sweden.
- "Nanofibers for energy and environment", MIT Mechanical Engineering Seminar, 5 Apr 2019, USA.
- "Novel Nanofiber Filters for Filtration of Nano-Aerosols", FiltCon, American Filtration and Separations Society Annual Meeting, 1-4 Apr 2019, Philadelphia/Cherry Hill, USA.
- "Nanofiber technologies in Energy and Environment", Georgia Tech Material Sciences Engineering Seminar, 3 Jan 2019, USA.
- "Challenges and Opportunities of Nano-Aerosol Filtration Using Nanofiber Filter", Am. Inst. Chemical Engineers Annual Meeting, Division Plenary: Major Separations Challenges, 30 Oct 2018, Pittsburgh, USA.
- "Nanofiber filter in aerosol filtration" in European Fluid-Particle Separation Conference, 15-17 Oct 2018, Lyon, France.
- "Nanofiber Technologies in Clean Air" in China Non-woven Association Conference, 5 Sep 2018, Shanghai, China.

Prof. SHI San-Qiang

- "Modeling of gas bubble evolution in nuclear fuel and pitting corrosion in metals under stress and/or temperature gradients", 13th International Conference on the Mechanical Behavior of Materials, 11-14 Jun 2019, Melbourne, Australia.
- "Machine learning prediction of elastic properties and glass forming ability of bulk metallic glasses", The Minerals, Metals & Materials Society 2019 Annual Meeting & Exhibition, 10-14 Mar 2019, San Antonio, Texas, USA.
- "Modeling of gas bubble in nuclear fuels", International Conference on Nuclear Engineering, 22-26 Jul 2018, London, UK.

Prof. SU Zhongqing

- "Nanocomposites-inspired Sensing for Ultrasonic-wave-based Structural Health Monitoring: from Distributed, through Quasi-Diffuse, to Fully-dispersed Sensing", The 4th International Conference on Structural Health Monitoring and Integrity Management, 21-23 Oct 2018, Hangzhou, China.

Distinguished
Lecture /
Keynote Speech

at International Conference / Symposium

Prof. WEN Chih-Yung

- "The 9th Asia Conference on Mechanical and Aerospace Engineering (ACMAE)", 29-31 Dec 2018, Singapore.
- "The 8th East Asia Mechanical and Aerospace Engineering Workshop", 24-26 Nov 2018, The Hong Kong Polytechnic University, Hong Kong.
- "Development of a high-performance ethanol-hydrogen peroxide fuel cell", 5th World Bioenergy Congress, 15-16 Apr 2019, Tokyo, Japan.
- "Development of next-generation direct ethanol fuel cells for a sustainable energy production", The 9th East Asia Mechanical and Aerospace Engineering Workshop, 30 May – 1 Jun 2019, Seoul, Korea.

Dr AN Liang

- "Development of a high-performance ethanol-hydrogen peroxide fuel cell", 5th World Bioenergy Congress, 15-16 Apr 2019, Tokyo, Japan.
- "Development of next-generation direct ethanol fuel cells for a sustainable energy production", The 9th East Asia Mechanical and Aerospace Engineering Workshop, 30 May – 1 Jun 2019, Seoul, Korea.

Dr CHOY Yat Sze

- "Sound quality control by micro-perforation panel housing device", 47th International Congress and Exposition on Noise Control Engineering (Inter-Noise 2018), 26 -29 Aug 2018, Chicago, USA.

Teaching & Learning

At ME Department, education is not only imparting knowledge and skills with excellent teaching quality but also nurturing all-round future leaders with creativity, global outlook and professional attributes by providing a holistic and fruitful learning experience.

Enhancing and maintaining excellent teaching quality has always been the major goal of the Department. The Department takes every effort to continuously improve teaching and learning performance to ensure the knowledge and skills students learnt in classrooms are up-to-date and applicable in real life.



Programmes Offered

The Department offers Doctorates, Master Degrees, and Bachelor Degrees. Students gain professionally recognized qualifications at different levels from the vibrant teaching and learning approach.

Undergraduate Programmes

Programme Title	Mode of Study
BEng(Hons) Scheme in Mechanical Engineering	Full-time (UGC funded)
BEng(Hons) in Mechanical Engineering	Full-time (UGC funded)
BEng(Hons) in Product Analysis and Engineering Design	Full-time (UGC funded)
BEng(Hons) in Mechanical Engineering	Part-time (Self-financed)
BEng(Hons) in Product Analysis and Engineering Design	Part-time (Self-financed)

Postgraduate Programmes

Programme Title	Mode of Study
MSc in Mechanical Engineering Four specialisms: <ul style="list-style-type: none"> • MSc in Mechanical Engineering (Product Development and Analysis) • MSc in Mechanical Engineering (Air/Noise Pollution Management) • MSc in Mechanical Engineering (Aeronautical Engineering) • MSc in Mechanical Engineering (Aviation) 	Mixed-mode (Self-financed)
Engineering Doctorate	Mixed-mode (Self-financed)

Performance Indicators

Student Enrollment

Programme	Year 1 Intake	Total no. of Students in 2017/2018
Full-time BEng(Hons) Scheme in Mechanical Engineering	69	142
Full-time BEng(Hons) in Mechanical Engineering (including Double Degree students)	0	228
Full-time BEng(Hons) in Product Analysis and Engineering Design	0	65
Part-time BEng(Hons) in Mechanical Engineering	0	220
Part-time BEng(Hons) in Product Analysis and Engineering Design	0	133
MSc/PgD in Mechanical Engineering	74	146
Part-time Engineering Doctorate	1	2
Total	144	936

Student Feedback Questionnaire (SFQ)

The student feedback questionnaires provide one of the major indicators to assess the effectiveness of teaching.

Items	ME Average	FENG Average
Subjects		
Clear understanding of what I am expected to learn	4.1	4.0
Teaching & learning activities helped me to achieve the subject learning outcomes	4.1	4.0
Assessments require demonstration of knowledge/ skills/ understanding of subject	4.2	4.1
Able to understand the criteria for grading	4.1	4.0
Staff		
Teaching was well-organized	4.1	4.1
Staff member was helpful	4.2	4.1
Useful and timely feedback	4.1	4.0
Encouraged students to ask questions/ discuss ideas	4.2	4.1
Encouraged students to learn independently	4.2	4.1
Overall view about the teaching of the staff member		
Provided me with a valuable learning experience	4.1	4.1
Overall, staff member is an effective teacher	4.1	4.1
Grand mean of item on Overall View	4.1	4.1

Student Exchange Programme

With strong commitment to cultivate global outlook, the Department offers student exchange opportunities to enhance students' cultural knowledge, languages skills and personal development. Every year, the Department arranges students to go on exchanges while outstanding students from the mainland and overseas are also recruited to its academic programmes.

Inbound

University	Country	No. of students
Beijing Institute of Technology	China	2
Cardiff University	United Kingdom	1
Global Educ European Engr Entrepreneurs	---	2
Global Engg Education Exchange Programme	---	2
Harbin Institute of Technology	China	2
Hochschule Konstanz University of Applied Sciences	Germany	9
Institut National Des Sciences Appliquees De Lyon	France	5
Management Center Innsbruck	Austria	4
McGill University	Canada	2
North Carolina State University	USA	1
Norwegian University of Science and Technology	Norway	1
Technical University of Denmark	Denmark	4
The Catholic University of America	USA	7
The University of Western Australia	Australia	1
University of Central Florida	USA	3
University of Science & Technology of China	China	2
University of Southern Denmark	Denmark	2
Wuhan University of Science and Technology	China	1
		Total: 51



Outbound

University	Country	No. of students
Cardiff University	United Kingdom	1
Czech Technical University in Prague	Czech Republic	1
Dublin Institute of Technology	Ireland	4
Institut National Des Sciences Appliquees De Lyon	France	1
Institut Polytechnique Des Sciences Avancees	France	2
McGill University	Canada	2
National University of Singapore	Singapore	1
Peter The Great St. Petersburg Polytechnic University	Russia	1
Tampere University of Technology	Finland	1
Technical University of Denmark	Denmark	2
University of Cincinnati	USA	1
University of Maryland, College Park	USA	1
University of Southern Denmark	Denmark	1
University of Technology of Troyes	France	1
		Total: 20



Work-Integrated Education (WIE)

To echo with the University's Work-Integrated Education (WIE) programme, the Department has established a close partnership with both local and overseas industrial / educational partners to offer a wide variety of placement opportunities to students who are always encouraged to acquire real world working experience before graduation.

Offshore Placement

Organization	Country
Be More 3D	Spain
Beijing Interjoy Technology Limited	China
BISSELL Asia Development Center (Shenzhen) Limited	China
BMW Brilliance Automotive Ltd	China
Carnegie Mellon University	USA
Chinese Culture Centre of Great Toronto	Canada
Daimler India Commercial Vehicles Pvt. Ltd.	India
First MOMA Asset Management (Beijing) Co. Ltd	China
Gudeng Precision Industrial Co., Ltd.	Taiwan
INEA d.o.o	Slovenia
Jinan Time Group	China
King Mongkut's University of Technology North Bangkok	Thailand
KwickScreen	UK
Poznan University of Technology	Poland
PT. Bando Indonesia	Indonesia
Raymond Industrial Limited	China
ROSATOM	Russia
Shanghai Electric Wind Power Group Co., Ltd	China
Shanghai Johnson Controls International Battery Co., Ltd.	China
Shenzhen Metro Group Co., Ltd.	China
Shenzhen Pavo-Tech Development Co Ltd	China
Ss Cyril and Methodius University	North Macedonia
Tata Elxsi	United Kingdom
Technical University of Denmark	Denmark
Thai Airways International Public Company Limited	Thailand
The Ulster University	UK
Tokyo City University	Japan
Ulsan National Institute of Science and Technology	Republic of Korea
Voi Technology AB	Sweden
Wiscom System Co.,Ltd.	China
Xi'an Jiaotong University	China
北京中航智科技有限公司	China
廣州尚一裝飾工程有限公司	China
濟南時代試金試驗機有限公司	China
浙江輝馳機械集團有限公司	China
航天創客科技有限公司	China

Work-Integrated Education (WIE)

Local Placement

Organization	Organization
ALBA Integrated Waste Solutions (Hong Kong) Ltd.	Microsoft HK
Artman Creation (Hong Kong) Ltd	Nan Fung Group
Atkins China Limited	New World First Bus Service Limited
BEAM Society Limited	Occupational Safety & Health Council
Brilliant (E&M) Engineering Limited	Otis Elevator Company
CLP Power Hong Kong Limited	REC Engineering Company Limited
Electrical and Mechanical Services Department, HKSAR	Refonia Limited
Faroll Limited	Sai Lung (E&M) Engineering Co.
Fugro Technical Services Limited	SANA Semiconductors Ltd
Gammon Construction Limited	SGS Hong Kong Limited
Great Stone Engineering Limited	Sharpwell Technology Ltd.
Healthlink Holdings Ltd	Shi Yi Hang
Hip Hing Aircon Trading Engineering Limited	Shun Hung P&D Engineering Limited
HKTaxi App Limited	Sika Hong Kong
Hong Kong Pickupp	The Hong Kong and China Gas Company Limited
Kai Kee M&E Engineering Company Limited	TÜV SÜD Hong Kong Limited
Karmo (Apollo) Group Ltd.	UtilityINFO Limited
Kerry Logistics	Wai Kong Fire Engineering Company Limited
Labour Department, HKSAR	Wai Wah Machinery Factory Ltd.
Lik Shun Engineering (H.K.) Limited	Young's Engineering Company limited
Marine Department, HKSAR	

IAESTE (Summer Training Exchange Programme)

To nurture students to become all-round global citizens, apart from WIE activities locally, students are also encouraged to take up internships in other parts of the world, while the Department welcomes students from overseas institutions to stay and work in the Department.

Student Name	Institute	Country
Inbound		
Muhannad Nasser Mohammed Hamed Al-RUMIDHI	Slutan Qaboos University	Oman
Ethan Mark HODGSON	Queen's University Belfast	UK
Stephan Roumenov KOSTOV	University of Strathclyde	UK
Marin MOMIROVSKI	University of Ss. Cyril and Methodius	Macedonia
Manjunath Anand PREMKUMAR	Technical University of Kosice	Slovakia
Katarzyna Zofia SKORUPKA	Wroclaw University of Science and Technology	Poland
Outbound		
HO Chun Yui	Occidental of Oman, Inc.	Oman
KWONG Tak Chun	King Mongkut's University of Technology North Bangkok	Thailand
LEROY Iorwen Hans	Ss. Cyril and Methodius University in Skopje	Macedonia
SHAGATAY Maral	Ulster University	UK
SHAM Fung Wa	CYPE Ingenieros S.A.	Spain
ZHOU Siyang	Poznan University of Technology	Poland

Mentorship Programme

The PolyU Department of Mechanical Engineering Alumni Mentorship Dinner 2018/19 was successfully held on 16 Jan 2019. About 100 alumni, honorable guests and academics, together with around 150 students from the graduating classes of BEng(Hons) in Mechanical Engineering and BEng(Hons) in Product Analysis and Engineering Design, attended the dinner.

The Alumni Mentorship Dinner is a tradition of ME to enhance the bonding between alumni with members of the Department and more importantly, to provide a platform for our final year students to learn practical experience and to get professional advice from alumni mentors.

For this year, we had high-flying members of the Departmental Advisory Committee joining the event:

Ir Darryl CH Chan

Managing Partner, Hong Kong Radar Aviation Services Ltd.

Mr Richard CW Chan

Assistant Director, Engineering Services Branch 3, Electrical & Mechanical Services Department

Ir Dr Angus HW Cheung

Chief Executive Officer, China Aircraft Services Limited (CASL)

Ir Chris KC Cheung

Director, Generation Engineering, CLP Power Hong Kong Limited

Dr Daniel Yip

Managing Director, G.E.W. International Corporation Limited

Mr Banting WP Sze

Chairman and Chief Executive Officer, Freetech Road Recycling Technology (Holdings) Limited



In the remarks by our outstanding alumni Dr Angus Cheung and Mr Banting Sze, their encouragement and previous experience to the final year students were a bonus and motto to them.

Our Department has always got talents, swinging up and down, around one's body, not talking about the acrobatics but the diabolo tricks. ME Student LOW Kah Onn did an impressive performance in the dinner and this linked the guests closer together. Cannot wait for another year!



The Dean's Honours List

The following students in the Department of Mechanical Engineering have satisfied the criteria (based on outstanding academic performance) for being included in the Dean's Honours List in the 2018/2019 academic year.

Recipient		
AU Ka Wai Christopher	KWAN Kai Lok	SHAGATAY Maral
BI Yanding	KWOK Chi Kwan	SHEK Chun Hei
CHAN Hon	LAM Chi Fai	TAHIR Abdullah
CHAN Ka Yiu	LAM Ka Yip	TANG Kin Ki
CHAN Kam To	LAU Kin Chiu	TSANG Chung Hin
CHEN Shujian	LAW Chung Kwan Nicholas	TSANG Sze Nga
CHEUNG Ka Ming	LEE Chak Fai	TSANG Wing Lok
CHIU Tang Hei	LEE Ka Yip	TSE Yan Yee Emily
CHOI Man Wai	LEE Tsz Hang	TSOI Ka Wa
CHOW Hung Ming Roy	LEE Wai Seng Stanley	WAN Chun Lai Dominic
CHU Tsz Shun	LEUNG Ka Shun	WANG Damin
CHUNG Shan	LEUNG Siu Tung	WONG Chak Yin William
DAI Yichen	LO Tsz Yuen	WONG Tsz Chiu
DING Yuxin	LOO Ka Po	YANG Chen
GAO Liwen	LOW Kah Onn	YU Wai Yin
HO Cheuk Hang	MAO Jiaqi	ZHANG Weiyi
HUANG Haihuai	PUN Kong Yin	ZHAO Jingyuan
JIANG Jiacong	RASHID Sameer	ZHOU Jiahong
KASSYMKHANOV Shyndaut	SAFIULLAH Saad Bin	ZHU Yaxuan
KEUNG Chun Yu	SEW Long Yin	ZHU Zhaoran

Prizes, Scholarships and Bursaries

Prizes and scholarships are honors, and serve to motivate and recognize the performance and contributions of students. Bursaries provide assistance to needy students so that they can concentrate on their studies.

Prize / Award	Recipient
Outstanding Student Award 2018, Department of Mechanical Engineering	LOW Kah Onn
HKSAR Government Scholarship Fund - Endeavour Merit Award	CHEUNG Hiu Ching
	SHAM Wai Kit
Scholarship	Recipient
A & P Scholarship	CHU Tsz Shun
	SIN Ching Yin Billy
Bright Future Charitable Foundation Overseas Exchange Scholarship	TANG Kin Ki
	GU Zhengping
CLP Scholarship in Mechanical Engineering	GU Zhengping
Chiang Chen Industrial Charity Foundation Scholarship	KO Shuk Ping
China Life Insurance (Overseas) Scholarship	KWONG Tak Chun
Cobelco Industrial Supplies Ltd. Scholarship	XU Xinrui
Commercial Radio 50th Anniversary Scholarship	CHOW Hung Ming Roy
	CHAN Chi Kin
	CHAN Hon
Department of Mechanical Engineering Scholarship for Hall Residents	SHAGATAY Maral
	JIANG Jiacong
Dr. Ng Tat-lun Memorial Scholarship	LEUNG Yue Hin
	LEE Wai Seng Stanley
Dr. Y.K. Ching Memorial Scholarship	DING Yuxin
	SUN Binzhi
	ZHANG Youren
	WONG Edward Ka Kit
HAESL Scholarship	HU Yuntao
	CHAN Hon
HKCC Scholarship for PolyU Articulation	CHAN Chi Kin
	CHAN Kai Chun
	KONG Yuk Ying
HKSAR Government Scholarship	BI Yanding
	CHENG Haoran
	XU Xinrui
HKSAR Government Scholarship Fund - Reaching Out Award	CHENG Haoran
	CHOW Hung Ming Roy
	DUAN Yufei
	HUO Xiaoyu
	LAM Kah Cheng
	LAW Tung Fan
	LOO Ka Po
	LOONG Cheng Sheng
ZHU Zhaoran	

Scholarship	Recipient
HKSAR Government Scholarship Fund - Talent Development Scholarship	CHEUNG Hiu Ching
	CHEUNG Lap Wing
	CHOW Hung Ming Roy
	GO Stanley
	HUNG Chun Sing
	LAM Kah Cheng
	SHIN Ji Ho
	SOMESHWAR Rudra Ajay
	SUEN Cheung Kit
	HKSAR Government Scholarship Fund - Targeted Scholarship
Hong Kong Aviation Scholarship	IP Shu Chuen
	NGAI Tsz Kit
	NGAI Tsz Kit
Hong Kong Plastics Manufacturers Association Scholarship	NG King Ning
Li Po Chun Charitable Trust Fund Scholarship	TSANG Sze Nga
Mitsubishi Electric (Hong Kong) Limited Scholarship	CHU Tsz Shun
Outstanding Graduates Scholarship	CHEN Peilin
	JIN Duo
	LIU Jinan
	LUI Ka Wing
	NGAI Tsz Kit
	WONG Ka Ching
	XU Nan
YUEN Ka Ki	
PolyU Community Service Fund Service-Learning Scholarship	KONG Yuk Ying
President Emeritus Professor Poon Chung-kwong Scholarship	CHENG Haoran
REC Engineering Company Limited Scholarship	IP Sheung Shing
Rexroth Industry 4.0 Scholarship	HUNG Chun Sing
	LIM Shun Yao
	LOW Kah Onn
	SIN Hin Pang Hugo
	KWAN Kai Lok
Simatelex Charitable Foundation Scholarship	SIN Ching Yin Billy
	TANG Kin Ki
	WAHYONO Darren Anthony
Targeted Scholarship Scheme - Belt & Road Scholarship (Indonesia)	HE Bingzhi
Tellhow Group Scholarship	HE Bingzhi
The Hong Kong & Kowloon Engineering Employers Association Limited Scholarship	BI Yanding
	LIANG Zixuan
	LOW Kah Onn
	ZHU Yaxuan
The Hongkong Electric Co. Ltd. Scholarship	CHEUNG Lap Wing

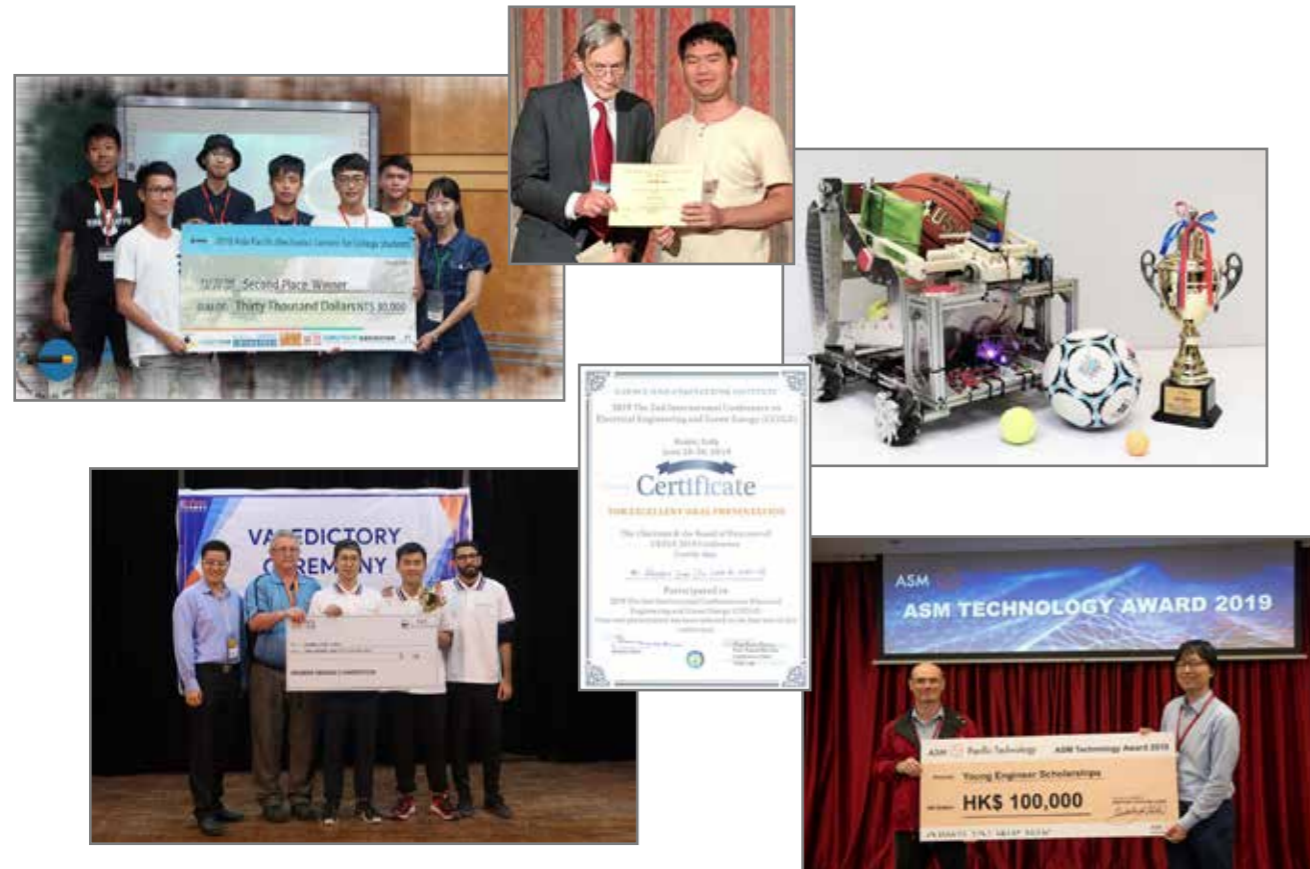
The Hong Kong Polytechnic University Entry Scholarship (Academic)	SHAGATAY Maral
	SAFIULLAH Saad Bin
	KHALID Farhan
	TAHIR Abdullah
	GONDAL Ahmad Hassan
	KASSYMKHANOV Shyndautet
	RASHID Sameer
	ASHRAFI Andalib
	JIA Lu Meng
The Hong Kong Polytechnic University Entry Scholarship (Academic) and Faculty of Engineering Undergraduate Scholarship	AKHMET Dias
The Hong Kong Polytechnic University Entry Scholarship (Non-Academic)	LIM Tsz Hin Jeff
The Hong Kong Polytechnic University-APEC Entry Scholarship	LAM Kah Cheng
	LIM Shun Yao
	MOEY Ziwei
	LOONG Cheng Sheng
	KWEON Tae Hyeon
	DELA CRUZ Xavier Roi Mangulabnan
VTech Group of Companies Scholarship	PANGURIPAN Theodor
	GU Zhengping
	CHENG Haoran
Wong Tit-shing Student Exchange Scholarship	HUO Xiaoyu
	LAU Kwun Hin
	LAW Tung Fan
	LEUNG Cheuk Hei
	LOONG Cheng Sheng
Bursary	
Bursary for Belt and Road (B & R) Scholarship Awardees	
Delong Bursary	
Freetech Technology Bursary	
K.K. Chow Bursary	
Ko Ho Ning Bursary	
Providence Foundation Bursaries	
The Croucher Foundation Fund for Students with Emergency Needs	
The Hongkong Electric Co. Ltd. Bursary	

Student Achievements

To maintain the competitiveness of students, the Department has been encouraging its students to actively participate in a wide range of local and international activities and competitions in order to showcase their talents and creativity as well as to build up their skills and confidence.

In the reporting year, ME students shined in many international and national competitions and awards. Their accomplishments offer concrete proof that the Department has succeeded in nurturing students who not only excel in academic areas, but also demonstrate great leadership and problem-solving skills.

Competition	Award
2018 Asia Pacific Mechanics Contest for College Students	Second Place
Innovation and Technology Project Competition 2018	Bronze Award
2018 American Society of Mechanical Engineers (ASME) Student Design Competition	1st Runner-up
2019 American Society of Mechanical Engineers (ASME) Student Design Competition, E-Fest Asia Pacific Region	2nd Runner-up
ASM Technology Award 2019	Gold Award
Best student paper competition	Sir James Lighthill Award
2nd International Conference on Electrical Engineering and Green Energy	Excellent Oral Award



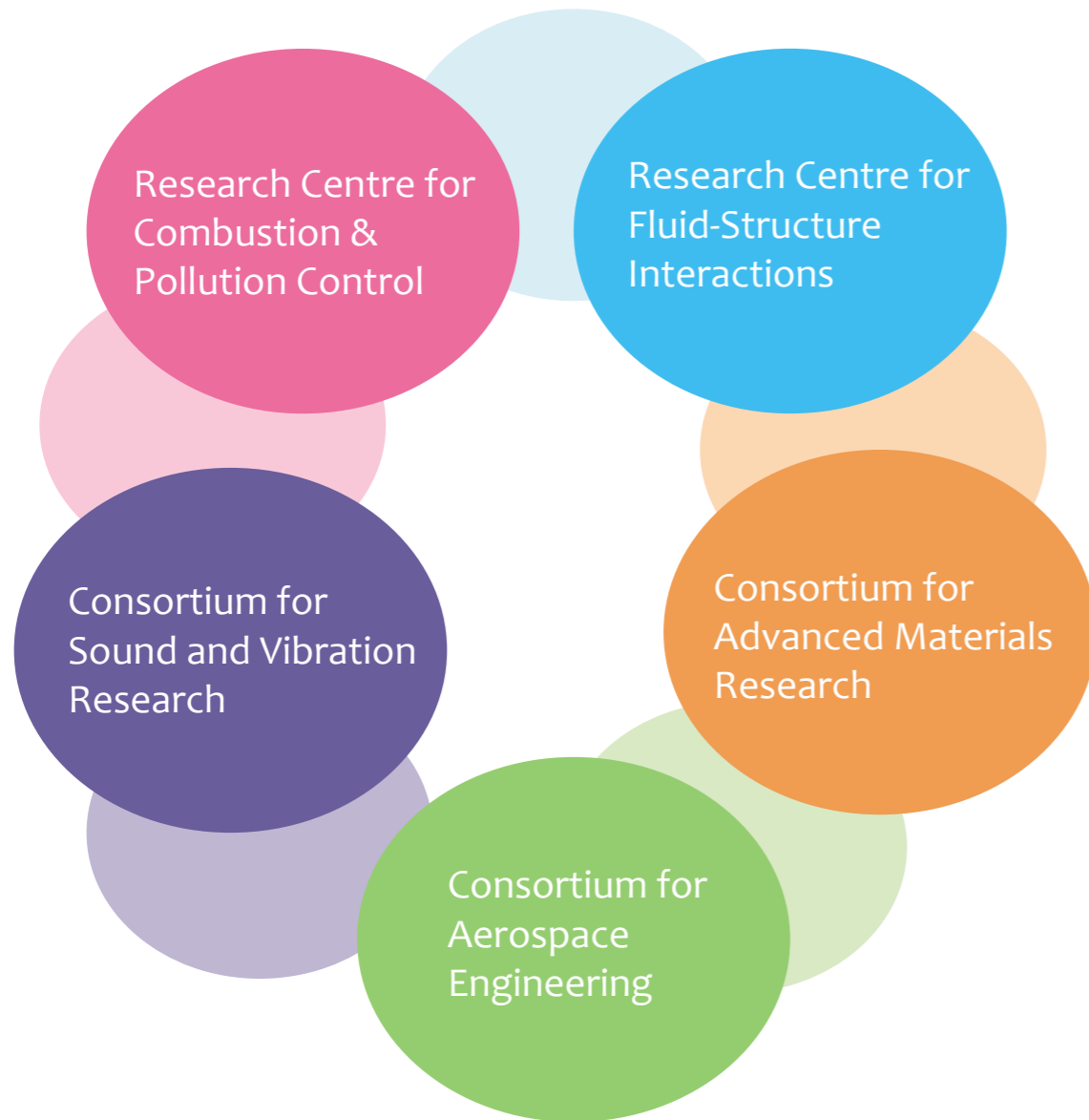
Research & Consultancy

The Department continues to push the frontiers of knowledge and applications in the discipline of Mechanical Engineering. With the spirit of driving innovation for a better future, members of the Department are playing an significant role in making high-impact contributions to the profession by engaging in fundamental and applied research development; high level consultancies for local and international organizations; and provision of knowledge and technologies to the industry.



Research Centre/ Consortiums

With different objectives and targets, the Department aims at all-rounded research efforts that could provide possible solutions towards a better living for the human race. In order to establish better synergy in research, five research areas where a critical mass of experts is available in each have been identified.

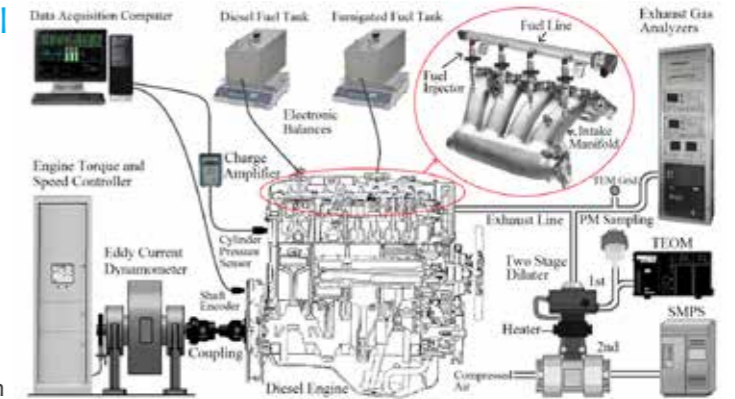


Research Centre for Combustion and Pollution Control

The CPC Research Centre is operated smoothly with collaborative effort from the key members, including Prof. WF Leung, Prof. TL Chan, Prof. CS Cheung, Dr L An and Dr P Zhang. The Research Centre is established to create and develop a critical mass in the fundamental and applied studies in combustion and combustion-related air pollution problems and their control. We are one of the leading research groups in the areas of flames and combustion, alternative fuels, internal combustion engine performance and emissions, electrical chemical energy storage systems and nano-technology for air pollution control. The CPC Research Centre has made significant contribution to the development of new curriculum and new subjects for the Department, and has provided many research and undergraduate projects for our students. Excellent research outputs, including patents, book chapters, journal publications and conference presentations are made by the key members of the Research Centre to enhance the image of PolyU. In addition, we have been active in providing consultancy/ expert services to the Environmental Protection Department of the HKSAR.

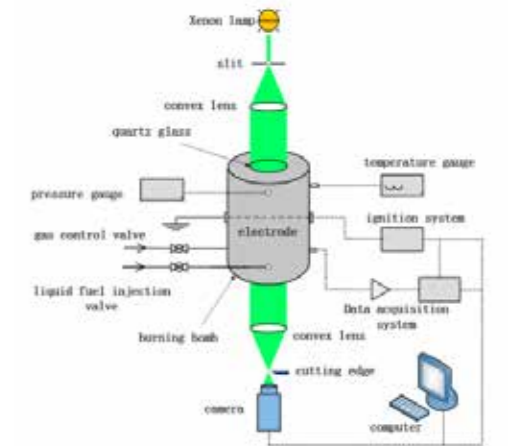
Application of Alternative Fuels to Diesel Engine

Research activities were focused mainly on the application of alternative fuels to diesel engine, which included the application of hydrogen, LPG, biodiesel and various alcohols. The influences of these alternative fuels on the combustion, performance, gaseous and particulate mass-number emissions, as well as the physico-chemical properties of the particulates were investigated. For the alcohols, the effects of both the blended mode as well as the fumigated mode have been investigated. The application of these alternative fuels could significantly reduce the particulate mass-number emissions and rendered the particulates easier to be oxidized.



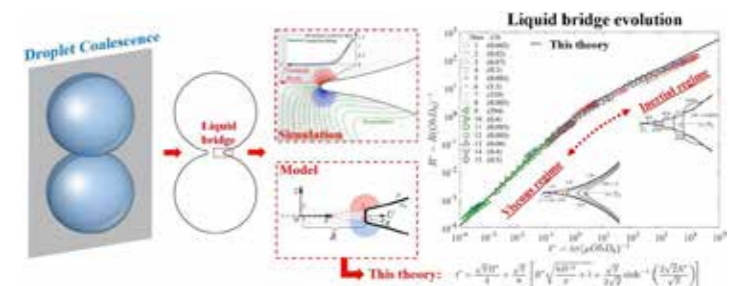
Bio-syngas Combustion

Bio-syngas primarily contains hydrogen (H₂), carbon monoxide (CO), and methane (CH₄). It may also contain other species like diluents nitrogen (N₂), carbon dioxide (CO₂), and high-order hydrocarbons. The variability of fuel composition in bio-syngas poses difficulties for combustor design, explosion damage control, and prevention of fire hazards. This project investigates the effects of fuel composition and diluents on the laminar burning velocity, cellular instability and explosion characteristics of bio-syngas.



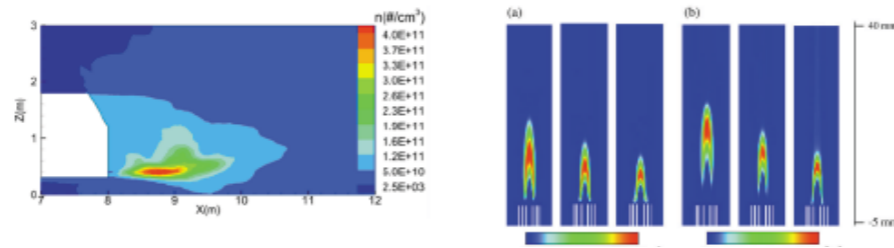
Discovered Universality of Droplet Coalescence

Droplet-droplet coalescence is of essence to numerous natural and industrial processes, for example, rain clouds formation and fuel spray in rocket engines. Nowadays, with the help of high-speed cameras, many experimental scientists have successfully captured the transient coalescence of liquid droplets that cannot be perceived by naked eyes. They discovered that, as the two droplets merge into one, the connecting liquid bridge grows by obeying two distinct rules: it either grows linearly with time when the droplets are smaller (or more viscous) or grows with the square-root of time when the droplets are bigger (or less viscous). To unveil the secret of the different rules governing droplet coalescence, a theory was recently established to unify the dynamics of liquid bridge growth. The theory is amazingly simple but innovatively integrates some mathematical techniques, such as integral equation and asymptotic analysis, with some physical insights, such as flow self-similarity and interfacial vortex.



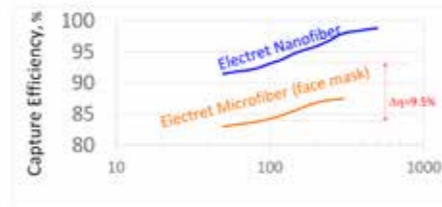
Multiphase and Multi-component Complex Systems with Micro- and Nano-scale

The development of novel model scheme for solving the challenging problems on multiphase and multi-component complex systems with micro- and nano-scale which have been identified in multi-disciplinary areas (i.e., thermal-fluid, materials, chemical and environmental sciences) and many potential engineering applications.



Charged Nanofiber Filter for Aerosol Filtration

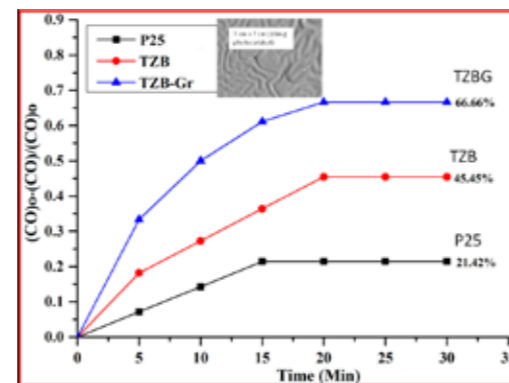
We have developed stable charged PVDF nanofibers that can effectively captured submicron aerosols 100 – 1000 nm. Examples are viruses that are attached to nuclei particles, agglomerated pollutant particles, and smog particles. As neutrally charged aerosols come close to the nanofibers, a dipole is induced followed by attraction capture between the charged fiber and the charge of the dipole aerosols. The charge nanofiber can increase filtration efficiency significantly without incurring pressure drop. The charged nanofiber mat can be multilayered to reduce the electrical interference of different layers of the charged fiber acting on the incoming aerosols. As a result, charged multilayered nanofiber mat made of PVDF can improve efficiency over existing mechanical filter of the same material by as much as 100%. Also, loading of charged multilayer nanofiber demonstrates that the filter can improve drastically the depth filtration which can last as much as more than 70% of the entire filter operation assuming the filter stops operation after reaching a terminal pressure drop. This is significantly changed from the charged single layer filter which operates only 30% in depth filtration. Also, charged nanofiber filter has been proven effective in capturing real aerosols from traffic emission same as with the NaCl aerosols generated in the laboratory.



Comparing our electret nanofiber filter with existing electret microfiber filter (9.5% add efficiency for 100nm particle)

Whitewash for Air/water Purification

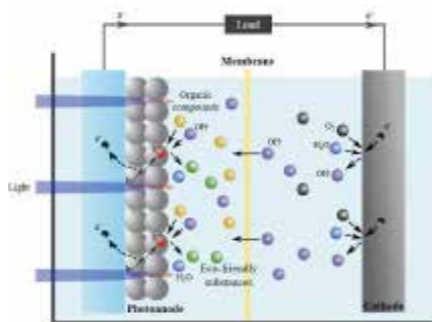
We have developed photocatalyst embedded in a coating that can effectively oxidize harmful gases in air, such as NOx and formaldehyde. It can also oxidize effectively harmful organics in water (simulated in the laboratory using methylene blue and rhodamine dye) much more effective than the P25, which is a gold standard photocatalyst. Also, it has been proven for effective disinfection killing both E. coli and S. Aureus in concentration of over 10,000 CFU/mL (30X dirty toilet). The technology has been protected by several United States patents and PCT and is licensed recently for commercialization for consumer products. One of the great benefits of the Whitewash is that the coating keeps the nanofibers enclosed. There is no concern on health hazard from loss of nanomaterials over use and no need for replenishment/recovery of the nanomaterials.



Whitewash with TZBG and TZB in converting formaldehyde of 700 ppb feed concentration.

Transport Phenomena in Electrochemical Energy Systems

Photocatalytic fuel cells: As an emerging wastewater treatment technology, photocatalytic fuel cell (PFC) can utilize solar energy to degrade the toxic organic compounds into eco-friendly substances and simultaneously harvest the chemical energy in the form of electricity, achieving environmental and economic sustainability by recovering valuable resources from wastewater. Before making the technology viable, however, the PFC performance must be substantially improved. Our current research focuses on the development of photocatalytic materials with novel properties for the light harvesting and the optimization in the structural design of the photoelectrode, which requires critical understanding of mass and charge transport through the photoelectrode.



Research Centre for Fluid-Structure Interactions

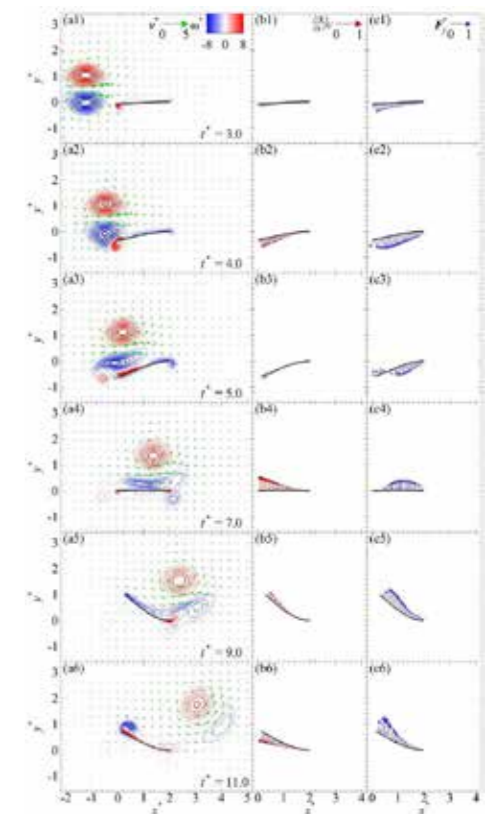
With rapid economic and industrial development in China, India and elsewhere, fluid-related structural vibration and noise problems are widely encountered in many fields, just as they are in the more developed parts of the world, causing increasingly grievous concerns. Turbulence clearly has a significant impact on many such problems. On the other hand, new opportunities are emerging with the advent of various new technologies, such as signal processing, flow visualization and diagnostics, new functional materials, sensors and actuators, etc. These have revitalized interdisciplinary research activities, and the Research Center focuses on biomedical applications, turbulent flows, biofluids, flow-induced vibration, and their control in relation to wings, wind turbines, buildings, cable-stayed bridges, moving vehicles, biomedical engineering, power equipment, heat-exchangers, micro and nano-scale structures, household appliances and products with innovation and technology values. Our research in fluid-structure interaction is world-class and our experimental/computational facilities are at the scientific frontier.

FSI Research Center has organized/co-organized the series symposium on fluid-structure-sound interactions and control (FSSIC) in 2013 in Hong Kong and Macau and in 2015 in Perth. Dr Yang LIU and other co-editors have edited the book “Fluid-Structure-Sound Interactions and Control” which was published by Springer in 2014 and 2016, respectively. These books are the Proceedings of the 2nd and 3rd Symposium on Fluid-Structure-Sound Interactions and Control which largely focuses on advances in the theory, experimental research and numerical simulations of turbulence in the contexts of flow-induced vibration, noise and their control. These books include several practical areas for interaction, such as the aerodynamics of road and space vehicles, marine and civil engineering, nuclear reactors and biomedical science etc. One of the particular features of these proceedings is that it integrates acoustics with the study of flow-induced vibration, which is not a common practice but is scientifically very helpful in understanding, simulating and controlling vibration.

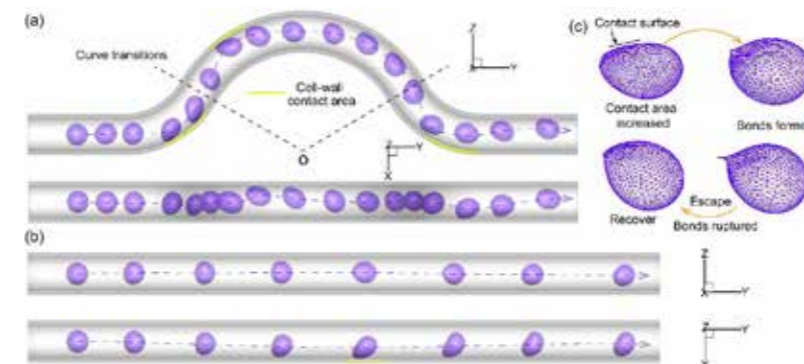


In the past year Dr Hui TANG has published 14 papers in top journals in FSI or fluid mechanics, including Journal of Fluids and Structures, International Journal of Heat and Mass Transfer, Experimental Thermal and Fluid Science, Bioinspiration & Biomimetics, and Journal of the Mechanics and Physics of Solids, He secured a GRF grant in 2018. The secured GRF research is an FSI research collaborating with University of California, Riverside, and Delft University of Technology. Dr Yang LIU has published 8 papers and one book chapter in 2018-2019 such as Computers and Mathematics with Applications and Biomechanics and modeling in mechanobiology, etc.

There are currently four GRF projects and one NSFC Major Program project running in the FSI research center.



Aeroelastic energy transfer from a Lamb dipole to a flexible cantilever



Tumor cell adhesion in blood vessel

Consortium for Advanced Materials Research

The research endeavors and activities of the consortium are mainly focused on the areas of advanced materials science and engineering covering nanomaterials & technologies, materials design & simulation, surface & interface technologies, structure-property relationships, and materials and structures including biomedical, functional, energy-related, composite and smart materials arenas. In addition, advanced materials processing and product design and analysis are also our research interests.

The research works carried out by the members of the consortium during this report period (from 1 July 2018 - 30 June 2019) resulted in 71 referred SCI journal papers, 26 conference papers, 2 patents and 4 authored books. The journals cover Science, Nature Energy, npj Computational Materials, Nano Energy, Int J of Mach Tool and Manuf., Mater Design, Int J of Mech Sci, Mater Sci Eng A, Int J Plasticity, Nanoscale, J. Alloys and Compounds, Int J of Mech and Solids of Physics, J of Mater Sci, J of Mater Process Tech, J of Mater Chem A, J. of Heat and Mass Transfer, J. of Chemical Eng., Mater Sci., Sci and Eng of Composite Materials, Int. J. of Applied Glass Science, Acta Materialia, etc. In addition, the CAMR members were successful in applying internal and external research funds in the past year. They secured 2 GRF grants, one NSFC key programme project, NSFC Yong Scholars Fund, and a number of projects from the industries, the university, and other funding agencies with a total amount of more than HK\$7.7 million.

CAMR members also actively participated in journal editorial boards including Editor-in-Chief for Composites Communications (Elsevier) and Advanced Materials Research (Trans Tech Publications), Editor for Encyclopedia of Materials: Metals and Alloys (Elsevier), and The American Journal of Applied Sciences (Science Publication), and Associate Editors for Science of Advanced Materials (American scientific Publishers), Journal of Nanoscience and Nanotechnology (American scientific Publishers), Journal of Computational and Theoretical Nanoscience (American scientific Publishers), Nanomaterials (Hindawi Publisher), Structural Health Monitoring (SAGA Publications), and International Journal of Smart and Nano Materials (Taylor & Francis). Meanwhile, members collaborated with various external organizations either on an individual basis or on a collective basis. Some major collaborators are Massachusetts Institute of Technology (MIT), Argonne National Laboratory, Johns Hopkins University, Pennsylvania State University, University of Oxford, Imperial College, Sydney University, Pacific Northwest National Lab USA, University of Alberta, Tsinghua University, Zhejiang University, Beijing University of Aeronautics & Astronautics (Beihang University), University of Science & Technology Beijing, Shanghai Jiaotong University, Tongji University, Shanghai University, Harbin Institute of Technology, Harbin Engineering University, Dalian University of Technology. These collaborations resulted in journal publications, consultancy projects and awards of research projects.

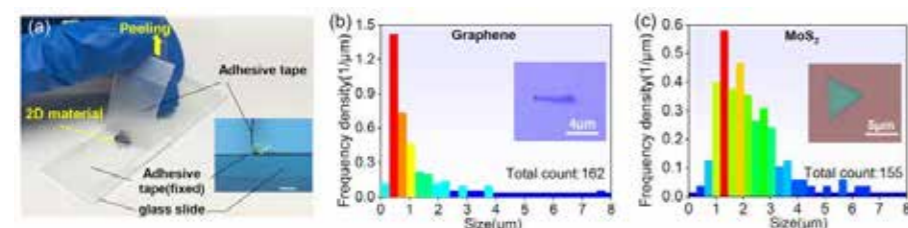


Fig. 3 Deciphering of the mechanical property of 2D materials based on the statistical distribution of the size of the fragments

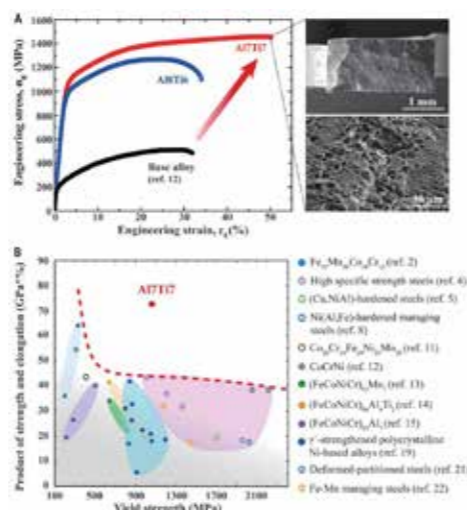


Fig. 1 Strong and ductile high-entropy alloys

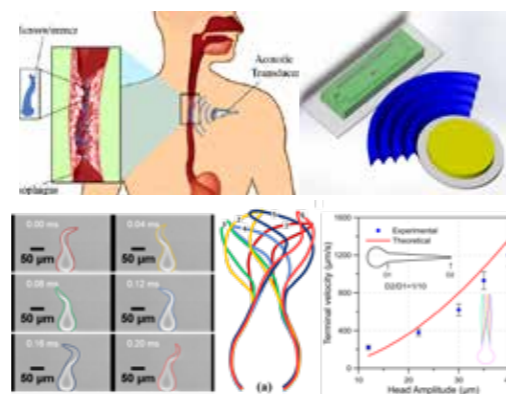


Fig. 2 Acoustically propelled micro-swimmers for medical applications

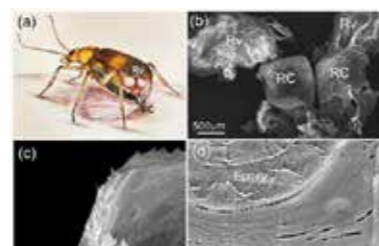


Fig.4 A setup to measure the thermal conductivity of the wall of reaction chambers of bombardier beetles

Consortium for Aerospace Engineering

The Consortium for Aerospace Engineering (CAE) has witnessed a successful seventh year, showing the strong commitment of ME, PolyU in developing the aerospace and aviation researches. The group has continued gaining international recognition in a number of aspects.

The CAE members were successful in applying research funds internally and externally in the past year. The CAE members secured 3 GRF projects, 2 NSFC general projects, 1 NSFC key project, 4 Hong Kong Scholar Fellowships, 1 ITF Tier 2 project, 1 project from Chinese National Engineering Research Centre (CNERC), and collaborative projects with Beijing Aeronautical Science and Technology Research Institute of COMAC and EMSD. The total amount is more than HK\$10 million.

The research works carried out by the CAE members have been shown consistently well, which is evidenced by the large number of quality papers published in the top notch journals in the area, such as AIAA Journal, Journal of Fluid Mechanics, Physics of Fluids, Journal of Acoustical Society of America, Structural Health Monitoring: An International Journal, Nature Materials, Advanced Materials, Physical Review Letters, Carbon, Acta Materialia, Applied Physics Letters, Nano Energy etc. In addition, Prof. ZQ Su was appointed by Elsevier as the new Editor-in-Chief of Ultrasonics. He assumed office on 1st January 2019. As General Chair, Prof Su also helped ME department organize the 7th Asia-Pacific Workshop on Structural Health Monitoring (APWSHM-2018) in Nov 2018. In June 2019, Prof. Wallace Leung received the IAAM medal from the International Association of Advanced Materials, Sweden, for his notable and outstanding research contribution in the field of Graphene and 2D Materials in Energy and Environmental Applications. Prof. Leung was also awarded the 1st Runner Up of 2019 Environmental Paper Award by the Environmental Division of the Hong Kong Institution of Engineers (HKIE). Prof CY Wen obtained PolyU's Faculty of Engineering Research Grant Achievement Award and Best paper award in the 18th National Shock Wave and Shock Tube Conference, Beijing, China. From 2018, Prof L Cheng was appointed to several new positions, including Deputy Editor-in-Chief and Receiving Editor, Journal of Sound and Vibration (JSV), Advisory Board Member in ASME transaction, Journal of Non-destructive Evaluation, Diagnostics and Prognostics of Engineering Systems, Editorial Board Member, Advances in Aircraft and Spacecraft Science, Techno Press, and Director, International Institute of Noise Control Engineering (I-INCE). Together with his directorship in the International Institute of Acoustics and Vibration (IIAV), he involved in the two largest world organizations in sound and vibration, each involving member societies from around 40 countries.



Prof. Zhongqing Su was appointed by Elsevier as the new Editor-in-Chief of Ultrasonics. He assumed office on 1 Jan 2019.



Prof. Wallace Leung received the IAAM medal from the International Association of Advanced Materials, Sweden

Many students' awards were received under the supervision of CAE members. Mr. Zhenbin Guo, PhD student under the supervision of Dr. HM Yao, received the "Excellent Oral Award" at the 2nd International Conference on Electrical Engineering and Green Energy (CEEGE 2019) in Roma, Italy in June 2019. At the 25th International Congress on Sound and Vibration (ICSV25) held at Hiroshima in Japan, Mr. Xiaoqi Zhang, a year-two PhD student under the supervision of Prof Li Cheng, won the prestigious Sir James Lighthill Award in the best student paper competition. Mr Yu Liang and Lili Liu, PhD students under the supervision of Prof CY Wen, won the Student Paper Competition Award of 32nd International Symposium on Shock Wave (ISSW32) held in Singapore.

Consortium for Sound and Vibration Research

Research Group

Director: Prof. L Cheng
 Deputy Director: Dr RCK Leung
 Members: Prof. ZQ Su
 Dr YS Choy
 Dr Henry Chu
 Dr XJ Jing
 Dr WO Wong
 Dr J Zhu

Mission

Since its establishment, the Consortium for Sound and Vibration Research (CSVR) defined its mission to carry out high-quality research and development to meet the societal needs of the society, by fostering close collaborations and building up synergy in sound and vibration research through a research network with overseas research institutions, public service corporations, local industry and governmental departments.

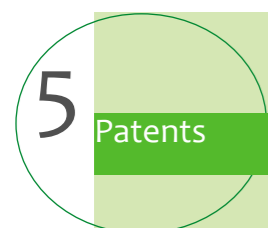
Research Funding

During the course of last year, CSVR has been maintaining its tradition and carrying out in-depth fundamental research and seeking high-end engineering applications. The success of the Consortium was reflected by the award of prestigious research grants, with a total amount of more than HK\$9 million.

Principal Investigator	Project Title	Funding Scheme/ Source	Awarded Funding (HK\$)
Prof. L Cheng	Thermo-Acoustic Oscillations: Mechanism Exploration and Control Based on Delay Differential Equation Theories Under a Fully-coupled Modelling Framework	General Research Fund	642,421.00
	MPP Sound Absorption Technology and Its Application to Domestic Devices	Midea Group Co., Ltd.	440,000.00
Prof. ZQ Su	Airworthiness Compliance Analysis and Verification of Structural Health Monitoring Technique (Child Project 1)	Beijing Aeronautical Science and Technology Research Institute of COMAC (Collaborative)	413,000.00
	基于“准-弥散”喷涂传感网络及超声非线性的疲劳损伤原位定量监测	National Natural Science Foundation of China - General Programme	711,000.00
	铁轨健康状态主动式监测技术验证	Non-government funded programme	104,400.00
Dr YS Choy	Tunable Sonic Perception Control Headset	Innovation and Technology Fund - University-Industry Collaboration Programme	5,805,000.00
Dr J Zhu	Investigation on broadband transition delay and stability control of hypersonic turbulent boundary layer via gradient-index acoustic metasurface	General Research Fund	642,421.00
	Non-Hermitian Systems in Optics and Acoustics (ME)	RGC Collaborative Research Fund	360,000.00
Total:			9,118,242.00

Research Output

Consortium members are attracting increasing international visibility and recognition by their active participations in almost all the most prestigious international journals in the field such as Journal of the Acoustical Society of America, Journal of Sound and Vibration, Mechanical Systems and Signal processing, Structural Health Monitoring, Ultrasonics, Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems etc. In 2018/19, CSVR members also worked out a lot of profound research outputs including patents, authored books, journal papers and conference proceedings.



On-going Research Projects

The Department has been very successful in recent years in winning research grant income from major sources including industry and the Government.

Externally funded projects

Project Title : Creation of Rechargeable Electron-fuels for Stationary Power Supplies and Electric Vehicles (ME)
 Investigators : L An
 Source of Funding : RGC Theme-based Projects
 Amount Sponsored : HKD 1,707,053

Project Title : Mass and Charge Transport Through the Porous Photoanode in Photocatalytic Fuel Cells for Simultaneous Wastewater Treatment and Electricity Generation
 Investigators : L An
 Source of Funding : RGC Early Career Scheme
 Amount Sponsored : HKD 820,000

Project Title : Understanding Charge Transport Phenomena in Photoelectrochemical Storage Cells for Solar Energy Storage
 Investigators : L An and H Tang
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 642,421

Project Title : A Novel Bivariate Taylor Expansion Method of Moments (BTEMOMs) for Multi-Scale Agglomerate Synthesis in Turbulent Combustion Flows
 Investigators : TL Chan and JZ Lin (Zhejiang University, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 835,025

Project Title : Development of a Novel Operator Splitting Framework for Solving Population Balance Equation on Aerosol Dynamics
 Investigators : TL Chan and K Zhou (Wuhan University of Science and Technology, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 579,126

Project Title : 多孔介质燃烧中气态及颗粒污染物生成与演化的实验及数值模拟研究
 Investigators : TL Chan
 Source of Funding : 面上项目
 Amount Sponsored : RMB 788,000

Project Title : Fundamental Investigation of Magneli Phase Titanium Oxide Nanotube Arrays as Host of Sulfur for Cathode of High Performance Lithium-Sulfur Batteries
 Investigators : GH Chen
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 200,502

Project Title : Investigation and Preparation of Long Cycle Life and Intrinsic Safe Lithium-Sulfur Batteries
 Investigators : GH Chen, YN Zhu, XY Qin, JC Liu (EVE Energy Co., Ltd., China), YH Deng (Southern University of Science and Technology, China), JL Wang (Shanghai Jiao Tong University, China), XQ Dai (Guangdong Yiding New Energy Automotive Co., Ltd., China) and J Chen (Dalian Institute of Chemical Physics, China)
 Source of Funding : Guangdong Key Areas Research and Development Scheme 2018/19 - "New energy Automotive" Major Special Project
 Amount Sponsored : HKD 3,888,889

Project Title : Oxidative Chemical Vapor Deposition of Conductive Polymers on Particle Materials as Cathodes for Lithium Ion Batteries
 Investigators : GH Chen and K Lau (Drexel University, US)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 637,584

Project Title : Preparation of High Performance Cathodes for Li-S Batteries and Their Property and Mechanism Study: Enhancement of Electron and Lithium Ion Transmission and Anchoring of Polysulfides
 Investigators : GH Chen and YF Deng (South China University of Technology, China)
 Source of Funding : RGC Joint Research Scheme
 Amount Sponsored : HKD 1,124,880

Project Title : A Hierarchical Diagnosis Strategy and Integrity Monitoring Technique for Space Structures and Systems
 Investigators : L Cheng, ZQ Su, YS Choy and XJ Jing
 Source of Funding : Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology
 Amount Sponsored : HKD 4,832,280

Project Title : Nonlinear Third-Harmonic Shear-Horizontal Waves for Structural Health Monitoring Through Incipient Defect Detection
 Investigators : L Cheng and JH Qiu (Nanjing University of Aeronautics and Astronautics, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 579,126

Project Title : Research on Structural Wave Manipulation and its Engineering Applications
 Investigators : L Cheng
 Source of Funding : State Key Laboratories of Mechanics and Control of Mechanical Structure, NUA, China
 Amount Sponsored : RMB 200,000

Project Title : Simulation, Monitoring and Control of Vibroacoustic Coupled Systems
 Investigators : L Cheng
 Source of Funding : State Key Laboratories of Mechanics and Control of Mechanical Structure, NUA, China
 Amount Sponsored : RMB 200,000

Project Title : Structure-Borne Wave Manipulation Through Acoustic Black Hole for Vibration and Noise Control Applications
 Investigators : L Cheng and JH Qiu (Nanjing University of Aeronautics & Astronautics, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 594,874

Project Title : Thermo-Acoustic Oscillations: Mechanism Exploration and Control Based on Delay Differential Equation Theories Under a Fully-coupled Modelling Framework
 Investigators : L Cheng
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 642,421

Project Title : Vibrating Structures Coupled to Open/Close Acoustic Cavities with Application to Micro-perforated Panels
 Investigators : L Cheng and JL Guyader (Institut National des Science Appliquees de Lyon, France)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 525,000

Project Title : Vibroacoustics of Structures with Space-Dependent Structural Inhomogeneity: Modelling and Physical Exploration
 Investigators : L Cheng
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 488,345

Project Title : 基于声学黑洞效应 (ABH) 的波操纵及其工程应用中的力学问题研究
 Investigators : L Cheng
 Source of Funding : 面上项目
 Amount Sponsored : RMB 1,000,000

Project Title : 面向载人航天器密封舱的噪音与振动控制理论方法及应用技术研究
 Investigators : L Cheng, XJ Jing, YS Choy and ZQ Su
 Source of Funding : China Academy of Space Agency (CAST)
 Amount Sponsored : RMB 1,194,000

Project Title : 3D Fabrication of Vascularized Tissue Constructs Through a Combined Robotic and Dielectrophoretic Bio-Printing System
 Investigators : KH Chu
 Source of Funding : RGC Early Career Scheme
 Amount Sponsored : HKD 732,164

Project Title : Development of Hybrid 3D Printing Technologies Aided by Reverse Engineering and Simulation Technologies for Making of Critical Spare Parts of Complex Systems
 Investigators : MW Fu, ZB Jiao and C Ng
 Source of Funding : Hong Kong Government (Electrical and Mechanical Services Department)
 Amount Sponsored : HKD 350,000

Project Title : Development of Semi-solid Forming Technologies for Fabrication of Micro-scaled and Fine-pitched Parts for Semiconductor and Microelectronics Applications
 Investigators : MW Fu
 Source of Funding : Hong Kong Government (ITF)
 Amount Sponsored : HKD 1,215,800

Project Title : Epistemological Investigation of the Scattering Deformation Behaviors and Phenomena and the Undesirable Geometries and Inaccurate Dimensions in Micro-Scaled Plastic Deformation
 Investigators : MW Fu
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 579,126

Project Title : 不同尺度下塑性变形中断裂行为差异及断裂准则有效性研究
 Investigators : MW Fu
 Source of Funding : 面上项目
 Amount Sponsored : RMB 752,000

Project Title : 不全冶金结合粉末原始边界的再结晶面棱隅形核的竞争机制研究
 Investigators : MW Fu
 Source of Funding : 面上项目
 Amount Sponsored : RMB 162,000

Project Title : 钛合金薄板电致增塑机理及微细冲压成形工艺研究
 Investigators : MW Fu
 Source of Funding : 面上项目
 Amount Sponsored : RMB 100,000

Project Title : 跨尺度构件形性协同塑性成形理论及技术基础研究
 Investigators : MW Fu
 Source of Funding : 重点项目
 Amount Sponsored : RMB 3,000,000

Project Title : Development and Application of TiC Reinforced Steel Matrix Composites Fabricated by in Situ Solidification
 Investigators : ZB Jiao, L Fan, BC Zhou, YF Lin (Guangdong Institute of Materials and Processing, China), CJ Hu (Guangzhou Lei Meng Machinery Equipment Co Ltd, China), KH Zheng (Guangdong Institute of Materials and Processing, China), ZC Luo (Guangdong Institute of Materials and Processing, China), JX Lin (Guangzhou Lei Meng Machinery Equipment Co Ltd, China) and DK Li (Guangzhou Lei Meng Machinery Equipment Co Ltd, China)
 Source of Funding : Guangzhou International Science and Technology Cooperation Project
 Amount Sponsored : HKD 681,360

Project Title : 共格 / 非共格纳米相复合强化钢的析出机理和强化机制
 Investigators : ZB Jiao
 Source of Funding : 青年科学基金项目
 Amount Sponsored : RMB 240,000

Project Title : Anti-Vibration Assistive Exoskeleton Technology for Manipulating Vibrating Tools
 Investigators : XJ Jing and KH Chu
 Source of Funding : Hong Kong Government (ITF)
 Amount Sponsored : HKD 1,304,000

Project Title : Development of a Smart Localization Technique of Thermal Source
 Investigators : XJ Jing
 Source of Funding : Guangzhou Purple River Technology Limited
 Amount Sponsored : HKD 239,700

Project Title : Modelling, Analysis & Design of Novel X-shaped Structures for Beneficial Nonlinear Stiffness and Damping Characteristics
 Investigators : XJ Jing, R Allen (The University of Southampton, UK) and R Vaidyanathan (Imperial College, UK)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 488,345

Project Title : Nonlinear Analysis and Design in the Frequency Domain: Theoretic Basis and Practical Methods
 Investigators : XJ Jing and L Cheng
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 1,163,130

Project Title : Computational Science and Engineering for Product Innovation and Aeronautical System Design
 Investigators : RCK Leung
 Source of Funding : Charities & Foundation (Philip K. H. Wong Foundation)
 Amount Sponsored : HKD 1,000,000

Project Title : Development of Advanced Close-Proximity (CPX) Technology with Suppressed Background Noise for Tyre/Road Noise Measurement in Hong Kong Traffic
 Investigators : RCK Leung and WT Hung (CEE)
 Source of Funding : Hong Kong Government (Environment and Conservation Fund)
 Amount Sponsored : HKD 1,628,140

Project Title : Experimental and Numerical Studies of Innovative Acoustical Material Technology for Industrial and Urban Low-Frequency Noise Mitigation
 Investigators : RCK Leung, WP Bi (Universite du Maine, Laboratoire d'Acoustique, France), Le D.A. (Universite du Maine, Laboratoire d'Acoustique, France) and Y. Auregan (Universite du Maine, Laboratoire d'Acoustique, France)
 Source of Funding : RGC Joint Research Scheme (ANR/RGC Joint Research Scheme)
 Amount Sponsored : HKD 3,240,000

Project Title : Novel Wave Functional Materials for Manipulating Light and Sound
 Investigators : RCK Leung
 Source of Funding : AoE Collaborated Project
 Amount Sponsored : HKD 345,000

Project Title : Development of Next Generation Multi-layer Chitosan Nanofiber Filters for Medical/ Environmental Use with Novel Filtration/Purification Technology
 Investigators : WWF Leung and H Feng (Avalon Nano-Biotech (HK) Limited)
 Source of Funding : Hong Kong Government (ITF)
 Amount Sponsored : HKD 2,727,266

Project Title : High-Efficiency, Titanium-Graphene Composite Nanofiber Photocatalyst Integrated Into Flexible Surfaces or Wearables For Improving Air Purification
 Investigators : WWF Leung
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 640,200

Project Title : A Sensor-Guided Robotic System for Automatic Manipulation of Laser, Radiofrequency, or related Instruments in Skin Rejuvenation Procedures
 Investigators : D Navarro Alarcon
 Source of Funding : Industry & Utilities (Rods Technology Company Limited)
 Amount Sponsored : HKD 386,515

Project Title : Experimental Study on Robotic Skin Rejuvenation with Thermal Monitoring
 Investigators : D Navarro Alarcon
 Source of Funding : Industry & Utilities (Rods Technology Company Limited)
 Amount Sponsored : HKD 46,000

Project Title : Fourier-Based Shape Control of Soft Objects with Multiple Active Manipulation Points and Online Model Estimation
 Investigators : D Navarro Alarcon
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 640,200

Project Title : Human-to-Robot Skill Transfer for Soft Manipulation in Unstructured Human Environments
 Investigators : D Navarro Alarcon
 Source of Funding : RGC Joint Research Scheme (France/HK Joint Research Scheme)
 Amount Sponsored : HKD 86,400

Project Title : Visuo-Tactile Learning of Mechanical Properties for Robotic Grasping of Inhomogeneous Objects
 Investigators : D Navarro Alarcon
 Source of Funding : RGC Joint Research Scheme (Germany/HK Joint Research Scheme)
 Amount Sponsored : HKD 43,200

Project Title : Constitutive Modelling of Glass: New Experiments and New Models
 Investigators : HH Ruan
 Source of Funding : RGC Early Career Scheme
 Amount Sponsored : HKD 921,290

Project Title : Investigation of the Evolution Kinetics of Porous Metals During Dealloying by Phase-field Method
 Investigators : SQ Shi
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 640,200

Project Title : Study of Gas Bubble Behavior for High Burnup Nuclear Fuels Using the Phase Field Methodology
 Investigators : SQ Shi, SY Hu (Pacific Northwest National Laboratory, US), YL Li (Pacific Northwest National Laboratory, US) and CH Woo (The City University of Hong Kong, HK)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 579,126

Project Title : 核燃料内部气泡演化行为的相场研究
 Investigators : SQ Shi
 Source of Funding : 面上项目
 Amount Sponsored : RMB 620,000

Project Title : A New Research Framework for Quantitative Characterization of Disorderedly Clustered Pitting-type Damage in Engineering Structures: A Bottleneck Breakthrough of Guided-wave-based Detection for Multitudinous Damage
 Investigators : ZQ Su and P Fromme (University of London, UK)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 488,345

Project Title : Airworthiness Compliance Analysis and Verification of Structural Health Monitoring Technique
 Investigators : ZQ Su, LM Zhou and F Zou (AAE)
 Source of Funding : Beijing Aeronautical Science and Technology Research Institute of COMAC
 Amount Sponsored : HKD 413,000

Project Title : In-situ Sensing and Characterization of Fatigue Damage Using Nonlinearity of Elastic Disturbance Perceived by a Coated CNT-graphene Hybrid Sensor Network
 Investigators : ZQ Su, LM Zhou and WK Li
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 550,000

Project Title : Probabilistic Evaluation of Hypervelocity Impact-Induced Damage Based on Cumulative Energy Transfer in Nonlinear Acousto-Ultrasonic Waves: a Framework for Space Application-Oriented Structural Health Monitoring
 Investigators : ZQ Su and QM Zhang (Beijing Institute of Technology, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 1,007,680

Project Title : 航空时变服役条件下复杂结构的损伤波动诊断
 Investigators : ZQ Su
 Source of Funding : 重点项目
 Amount Sponsored : RMB 950,000

Project Title : 基于“准-弥散”喷涂传感网络及超声非线性的疲劳损伤原位定量监测
 Investigators : ZQ Su
 Source of Funding : 面上项目
 Amount Sponsored : RMB 650,000

Project Title : 損傷誘發彈性波非線性特征的研究及其在飛行器 FRP 材料健康監測中的應用
 Investigators : ZQ Su and SF Yuan (Nanjing University of Aeronautics and Astronautics, China)
 Source of Funding : 機械結構力學及控制國家重點實驗室開放課題項目
 Amount Sponsored : RMB 200,000

Project Title : 结构疲劳裂纹的非线性波动特征及其概率诊断与监测
 Investigators : ZQ Su
 Source of Funding : 面上项目
 Amount Sponsored : HKD 201,520

Project Title : On Physical Mechanism and Fluidic Control of Floppy Iris Syndrome During Cataract Surgery
 Investigators : H Tang, KK Ramaesh (Gtennent Institute of Ophthalmology, UK), PS Stewart (University of Glasgow, UK) and XY Luo (School of Mathematics & Statistics, UK)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 820,776

Project Title : Study of Magnetic Hyperthermia Based Cancer Treatment using a Holistic Simulation Framework
 Investigators : H Tang, S Kenjeres (Delft University of Technology, Netherlands) and K Vafai (University of California, Riverside, US)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 654,921

Project Title : A Unique Multipurpose Transonic-to-Hypersonic Ludwig Tube Facility for Study of the High-Speed Aerodynamics
 Investigators : CY Wen, L Cheng, RCK Leung, P Zhang, CH Cheng (ISE), LX Huang (The University of Hong Kong, HK), HH Qiu (The Hong Kong University of Science and Technology, HK) and K Xu (The Hong Kong University of Science and Technology, HK)
 Source of Funding : RGC Collaborative Research Fund
 Amount Sponsored : HKD 4,500,000

Project Title : Development of a Wind-field Simulation Platform to Assess Installation Sites of Wind Turbines in Highly Urbanized Areas of Hong Kong
 Investigators : CY Wen
 Source of Funding : Hong Kong Government (Environment and Conservation Fund)
 Amount Sponsored : HKD 1,062,660

Project Title : Experimental Investigation on Flow Instabilities of a Miscible Magnetic Droplet in a Hele-Shaw Cell
 Investigators : CY Wen
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 550,000

Project Title : Investigation and Optimization of Porous Coatings on the Stabilization of Hypersonic Boundary-Layer Flows
 Investigators : CY Wen, L Cheng and R Zhao (Beijing Institute of Technology, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 642,421

Project Title : Investigation on Aerodynamic Breakup of a Liquid Droplet Behind a Shock Wave
 Investigators : CY Wen
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 816,580.75

Project Title : The Application of Dielectric Barrier Discharge Plasma Actuators on Active Flow Control around a Bluff Body
 Investigators : CY Wen
 Source of Funding : Non – Hong Kong (Office of Naval Research)
 Amount Sponsored : HKD 557,420

Project Title : The Design, Manufacture, Analysis and Control of Vertical Take-Off and Landing (VTOL) Unmanned Aerial Vehicles (UAVs)
 Investigators : CY Wen and SJ Shen (HKUST)
 Source of Funding : Innovation and Technology Fund ITF Funding: HK\$4,551,200
 DJI Innovations Technology Co., Ltd. Sponsorship: \$1,000,000
 Amount Sponsored : Amount of funding to allocated to PolyU: \$2,033,750

Project Title : 液态燃料爆轰波形成之数值模拟研究
 Investigators : CY Wen
 Source of Funding : 爆炸科学与技术国家重点实验室 (北京理工大学) 开放基金项目
 Amount Sponsored : RMB 100,000

Project Title : 存在粒度分布的铝粉 - 空气两相爆轰波的数值模拟研究
 Investigators : CY Wen
 Source of Funding : 国家重点实验室开放基金
 Amount Sponsored : RMB 100,000

Project Title : 汇聚激波诱导可燃界面的 Richtmyer-Meshkov 不稳定性研究
 Investigators : CY Wen
 Source of Funding : 面上项目
 Amount Sponsored : RMB 620,000

Project Title : 声学超表面对高超声速边界层转捩的抑制机理与应用
 Investigators : CY Wen
 Source of Funding : 面上项目
 Amount Sponsored : RMB 200,000

Project Title : Infrasonic Vibration Suppression Using Viscoelastic Dynamic Absorber
 Investigators : WO Wong
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 758,225

Project Title : Investigation of the Lithiation Process in Constrained Anode Materials for High-Performance Lithium Ion Batteries
 Investigators : HM Yao and HT Wang (Zhejiang University, China)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 835,025

Project Title : Investigation on the Mechanics of Adhesion between Tubeworm (Hydroides elegans) and Substrata
 Investigators : HM Yao and V Thiyagarajan (The University of Hong Kong, HK)
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 762,183

Project Title : 多級生物黏附結構的實驗研究和仿製
 Investigators : HM Yao, LL Hu (Sun Yat-sen University, China), XG Lei (Sun Yat-sen University, China), SY Liu (Sun Yat-sen University, China) and Q Ye (Sun Yat-sen University, China)
 Source of Funding : 面上項目
 Amount Sponsored : RMB 450,000

Project Title : 硅基锂电池负极材料的仿生梯度化设计与制备
 Investigators : HM Yao
 Source of Funding : 面上项目
 Amount Sponsored : RMB 640,000

Project Title : Dynamics of Binary Droplet Collision under Elevated Gas Pressures
 Investigators : P Zhang
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 550,000

Project Title : Experimental and Numerical Investigation on the Collision of Binary Droplets of Shear-Thinning Fluids in Atmospheric Air
 Investigators : P Zhang
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 1,015,442

Project Title : 高压环境下喷雾过程液滴碰撞模型的研究
 Investigators : P Zhang
 Source of Funding : 国家重点实验室开放基金
 Amount Sponsored : RMB 100,000

Project Title : 大分子直链烷烃高精度从头算燃烧反应动力学的研究
 Investigators : P Zhang
 Source of Funding : 重大研究计划项目
 Amount Sponsored : RMB 600,000

Project Title : Frenkel-Kontorova Model Based Simulation on the Deformation Mechanisms in Nanostructured High-entropy Alloys
 Investigators : GP Zheng
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 642,421

Project Title : Investigations on the Formability and Mechanical Properties of Nano-Glasses by a Simulation Approach Combining Ab Initio Molecular Dynamics and Phase-Field Modeling
 Investigators : GP Zheng
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 810,776

Project Title : Airworthiness Compliance Analysis and Verification Study on Structural Health Monitoring System
 Investigators : LM Zhou, ZQ Su and FX Zou (AAE)
 Source of Funding : Beijing Aeronautical Science and Technology Research Institute of COMAC
 Amount Sponsored : HKD 2,970,000

Project Title : Size- and Temperature-dependent Phase Transition in NASICON-type Material on Li⁺- and Na⁺-(de) intercalation
 Investigators : LM Zhou and SQ Shi
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 642,421

Project Title : Sustainable Marine Infrastructure Enabled by the Innovative Use of Seawater Sea-Sand Concrete and Fibre-Reinforced Polymer Composites - ME
 Investigators : LM Zhou and JG Teng (CEE)
 Source of Funding : RGC Theme-based Projects
 Amount Sponsored : HKD 506,835

Project Title : Design of Passive Unidirectional Acoustic Metamaterials
 Investigators : J Zhu
 Source of Funding : RGC Early Career Scheme
 Amount Sponsored : HKD 631,290

Project Title : Investigation on Broadband Transition Delay and Stability Control of Hypersonic Turbulent Boundary Layer via Gradient-index Acoustic Metasurface
 Investigators : J Zhu
 Source of Funding : RGC General Research Fund
 Amount Sponsored : HKD 642,421

Project Title : Non-Hermitian Systems in Optics and Acoustics (ME)
 Investigators : J Zhu and JTH Li (The Hong Kong University of Science and Technology, HK)
 Source of Funding : RGC Collaborative Research Fund
 Amount Sponsored : HKD 360,000

Project Title : 基于超构表面的突破衍射极限的声波聚焦和成像
 Investigators : J Zhu
 Source of Funding : 面上项目
 Amount Sponsored : RMB 620,000

Projects funded by Central Research Grant

Project Title : Flow and Transport Phenomena through Hierarchical Porous Electrodes in Vanadium Redox Flow Batteries for Large-scale Energy Storage
 Investigators : L An
 Amount Sponsored : HKD 150,000

Project Title : The New Generation of High Capacity Batteries for Energy Storage
 Investigators : GH Chen
 Amount Sponsored : HKD 5,025,000

Project Title : Guided Wave Propagation in Both Plane and Cylindrical Structures with Applications to Crack Detection in Train Axles
 Investigators : L Cheng
 Amount Sponsored : HKD 500,000

Project Title : Structural and Acoustic Waves: Manipulation, Control and Monitoring
 Investigators : L Cheng
 Amount Sponsored : HKD 315,000

Project Title : Vibration Control and Structural Health Monitoring for High Speed Train Applications
 Investigators : L Cheng
 Amount Sponsored : HKD 500,000

Project Title : Influence of Biofuels on the Particulate Emissions of a Diesel Engine
 Investigators : CS Cheung and Z Ning (The City University of Hong Kong)
 Amount Sponsored : HKD 227,000

Project Title : Broadband Sound Insulation Panel Embedding with an Array of Tubular Cavities Covered by Membranes in Random Alignment
 Investigators : YS Choy
 Amount Sponsored : HKD 198,215

Project Title : Fan Noise Suppression by Light Microperforated Panel with Non-uniform Grazing Shear Flow
 Investigators : YS Choy
 Amount Sponsored : HKD 189,000

Project Title : Panel Silencing Device for Environmental Noise Control
 Investigators : YS Choy
 Amount Sponsored : HKD 189,000

Project Title : Automated Vision-based Micro-surgical Task Execution through a Robotic Multi-arm Micromanipulation System
 Investigators : KH Chu
 Amount Sponsored : HKD 200,000

Project Title : Development of a 3D Model-based Approach for Automated Surgical Knot Tying
 Investigators : KH Chu
 Amount Sponsored : HKD 189,000

Project Title : Development of a Motorized Microchip Platform for High-throughput Cell Assay and Characterization
 Investigators : KH Chu
 Amount Sponsored : HKD 50,000

Project Title : Experimental and Theoretical Study of the Friction and Adhesion in the Micro Hot Embossing of Polymers
 Investigators : MW Fu and XM Lai (Shanghai Jiao Tong University, China)
 Amount Sponsored : HKD 180,600

Project Title : Modelling and Control of Springback in Warm Bending of Titanium Tubular Materials
 Investigators : MW Fu and H Li (Northwestern Polytechnical University, China)
 Amount Sponsored : HKD 180,600

Project Title : Numerical Evaluation of Damage and Failure Behaviours of Carbon Fiber Reinforced Metal Matrix Composites
 Investigators : MW Fu and HH Ruan
 Amount Sponsored : HKD 695,400

Project Title : Plastic Deformation Based Processing of Advanced Materials
 Investigators : MW Fu
 Amount Sponsored : HKD 315,000

Project Title : Research on Advanced Processing of Engineering Materials
 Investigators : MW Fu
 Amount Sponsored : HKD 315,000

Project Title : Shape Memory Performance and Micro-mechanics of 3D Printed Structures Made of Shape Memory Alloys for Bio-medical Applications
 Investigators : MW Fu, SQ Shi, XS Yang (ISE) and Y Yang (The City University of Hong Kong, HK)
 Amount Sponsored : HKD 400,000

Project Title : Size Effect Based Micro-mechanics and Its Affected Behaviors and Phenomena in Micro-manufacturing and Micro-product Service
 Investigators : MW Fu and SQ Shi
 Amount Sponsored : HKD 500,000

Project Title : Design of High-strength and High-ductility Titanium Alloys for Aerospace Applications
 Investigators : ZB Jiao
 Amount Sponsored : HKD 200,000

Project Title : Microstructure Control and Property Optimization of High-strength Weldable Steels Strengthened by Nanoparticles for Construction Applications
 Investigators : ZB Jiao, ZY Ding, BC Zhou and L Fan
 Amount Sponsored : HKD 400,000

Project Title : Solute Segregation and Precipitation Mechanism in Nanoparticle-strengthened High-entropy Alloys
 Investigators : ZB Jiao
 Amount Sponsored : HKD 200,000

Project Title : Strengthening of High-entropy Alloys by Nanoscale Coherent Precipitates
 Investigators : ZB Jiao
 Amount Sponsored : HKD 50,000

Project Title : Employing Bio-Inspired Structure Nonlinearity in Passive Vibration Isolation: Theory, Methods, and Applications
 Investigators : XJ Jing
 Amount Sponsored : HKD 189,000

Project Title : Nonlinear Dynamics and Control with Innovative Applications (Mechanical Systems or Robots)
 Investigators : XJ Jing
 Amount Sponsored : HKD 315,000

Project Title : Nonlinear Dynamics, Vibration, and/or Control, and Applications
 Investigators : XJ Jing
 Amount Sponsored : HKD 315,000

Project Title : Robotic Technology for Underwater Infrastructure Inspection
 Investigators : XJ Jing, WL Lai (LSGI), QX Wang (COMP) and Y Xia (CEE)
 Amount Sponsored : HKD 1,000,000

Project Title : Thermal, Explosion, Burning and Emission Characteristics of Premixed Flame Jets Array Burning Liquefied Petroleum Gas Enriched with Hydrogen
 Investigators : CW Leung, P Zhang and ZH Huang (Xi'an Jiaotong University, China)
 Amount Sponsored : HKD 189,000

Project Title : A Study of the Effects of Aeroacoustic-Structural Interaction on Airfoil Trailing Edge Noise
 Investigators : RCK Leung
 Amount Sponsored : HKD 189,000

Project Title : Exploration of Tunable Fluid-structure Interaction for Development Advanced Aeronautical Noise Mitigation Technology
 Investigators : RCK Leung
 Amount Sponsored : HKD 315,000

Project Title : Charge Transport in Perovskite Solar Cell
 Investigators : WWF Leung
 Amount Sponsored : HKD 189,000

Project Title : Numerical Modelling of Continuous Deposition of Nanoparticles in a Nanofiber Filter and Conversion of the Deposited Particles by Photocatalysis
 Investigators : WWF Leung
 Amount Sponsored : HKD 150,000

Project Title : Effect of Arteriovenous Shunts and Vessel Leakiness on Flowmotion in Normal and Tumor Vasculature
 Investigators : Y Liu and BM Fu (City College New York, USA)
 Amount Sponsored : HKD 189,000

Project Title : Effect of Red Blood Cell on Tumor Cell Adhesion -- Dissipative Particle Dynamics Study
 Investigators : Y Liu
 Amount Sponsored : HKD 50,000

Project Title : Adaptive Visuo-Motor Models for Robotic Welding in Uncertain Construction Environments
 Investigators : D Navarro Alarcon
 Amount Sponsored : HKD 314,600

Project Title : Development of Robotic Technologies for Natural Human-Robot Interactions
 Investigators : D Navarro Alarcon and KH Chu
 Amount Sponsored : HKD 450,000

Project Title : Perceptual and Cognitive Methods for Intelligent Robot Behaviour
 Investigators : D Navarro Alarcon
 Amount Sponsored : HKD 200,000

Project Title : A Preliminary Study on an Acoustically-driven Artificial Sperm-like Structure that Swims for Targeted Heating
 Investigators : HH Ruan
 Amount Sponsored : HKD 150,000

Project Title : An Investigation of Dynamic Behavior of Metallic Glasses Using Mini SHPB System
 Investigators : HH Ruan
 Amount Sponsored : HKD 189,000

Project Title : Impact Induced Structural Vibration and Energy Conversion -- a Conceptual Investigation on Kinetic Energy Harvesting in Low-speed Impact
 Investigators : HH Ruan
 Amount Sponsored : HKD 189,000

Project Title : Towards the Unique Miniaturized Optical Split Hopkinson Pressure Bar Apparatus - A Conceptual Investigation on Measuring Ultrahigh Strain Rate Using Optical Methods
 Investigators : HH Ruan
 Amount Sponsored : HKD 200,000

Project Title : Study of Advanced Structural and/or Functional Materials
 Investigators : SQ Shi
 Amount Sponsored : HKD 315,000

Project Title : Study of Intragranular Gas Bubble Behavior for High Burnup Nuclear Fuels Using Phase Field Methodology
 Investigators : SQ Shi, SY Hu (Pacific Northwest National Lab, US) and YT Li (Pacific Northwest National Lab, US)
 Amount Sponsored : HKD 189,000

Project Title : Study of Phase Stability of Low Dimensional High Entropy Alloys
 Investigators : SQ Shi and ZB Jiao
 Amount Sponsored : HKD 700,000

Project Title : An Insight into Shock Wave Propagation under Hypervelocity Impact (>4 km/s) and Its Application to Characterizing Orbital Debris-induced Damage in Space Structures
 Investigators : ZQ Su
 Amount Sponsored : HKD 189,000

Project Title : Quantitative Damage Evaluation Using Nonlinear Vibro-Acoustics
 Investigators : ZQ Su
 Amount Sponsored : HKD 315,000

Project Title : Closed-loop Active Flow Control Using Machine Learning
 Investigators : H Tang
 Amount Sponsored : HKD 189,000

Project Title : Enhancement of Flapping-wing MAV Aerodynamic Performance Using Active Flow Control
 Investigators : H Tang
 Amount Sponsored : HKD 189,000

Project Title : Control Techniques for Supersonic / Hypersonic Boundary Layer Transition
 Investigators : CY Wen
 Amount Sponsored : HKD 48,200

Project Title : Experimental and Numerical Investigation on the Interfacial Instability Induced by Rippled Shock Waves
 Investigators : CY Wen and XS Luo (University of Science and Technology of China)
 Amount Sponsored : HKD 180,600

Project Title : Theoretical and Numerical Study on Vibrational Nonequilibrium Effect on Hydrogen Detonation
 Investigators : CY Wen
 Amount Sponsored : HKD 189,000

Project Title : UAV-Enabled Intelligent Bridge Inspection Systems for the Smart City
 Investigators : CY Wen, P Lu (AAE), LT Hsu (AAE), W Chen (LSGI) and SJ Shen (The Hong Kong University of Science and Technology, HK)
 Amount Sponsored : HKD 400,000

Project Title : Optimizing Heterogeneity in Si-based Nanocomposite Anode Materials for Higher Electrochemical Performance
 Investigators : HM Yao
 Amount Sponsored : HKD 189,000

Project Title : Structural Optimization of Hierarchical Porous Anode for High Performance Microbial Fuel Cell
 Investigators : HM Yao and SL Chen (Jiangxi Normal University, China)
 Amount Sponsored : HKD 189,000

Project Title : Experimental Study and Large Eddy Simulation of Slotted Swirler Combustor Fueled with Natural Gas/Synthesis Gas Mixtures
 Investigators : P Zhang and Y Yang (Peking University, China)
 Amount Sponsored : HKD 242,550

Project Title : Hypergolic Ignition Induced by Propellant Droplet Collision
 Investigators : P Zhang
 Amount Sponsored : HKD 378,000

Project Title : Spray Impingement Modelling and Simulation based on Accurate Description of Droplet Impact Dynamics
 Investigators : P Zhang and CL Tang (Xi'an Jiaotong University, China)
 Amount Sponsored : HKD 180,600

Project Title : First-principles Calculations and Experimental Verification of Ferroelectrics in Two-dimensional Materials
 Investigators : GP Zheng
 Amount Sponsored : HKD 189,000

Project Title : Investigations on the Mechanical Properties of Bulk Amorphous Alloys with Nano-sized Microstructures
 Investigators : GP Zheng
 Amount Sponsored : HKD 315,000

Project Title : Multi-scale Simulation on the Deformation Mechanisms of Disordered Alloys
 Investigators : GP Zheng
 Amount Sponsored : HKD 315,000

Project Title : The Pyroelectric Properties and Electro-caloric Effect of Graphene Oxide-copolymer Multi-layer Structures
 Investigators : GP Zheng and HH Ruan
 Amount Sponsored : HKD 695,400

Project Title : Bi-functional Metal Organic Framework-derived Porous Electrospun Nanofiber Materials for Lithium-sulfur Batteries
 Investigators : LM Zhou and HM Yao
 Amount Sponsored : HKD 700,000

Project Title : Development of Nanocomposite Materials for Energy Storages
 Investigators : LM Zhou
 Amount Sponsored : HKD 315,000

Project Title : Graphene Strengthened Silicon Nanocomposite Anodes for Lithium Ion Batteries
 Investigators : LM Zhou, HT Huang (AP), HM Yao, JK Kim (Hong Kong University of Science and Technology, HK), SQ Shi and CY Tang (ISE)
 Amount Sponsored : HKD 400,000

Project Title : Optimal Si-nanoparticle-based Nanocomposite Structure with Long-term Stability for Li-ion Batteries
 Investigators : LM Zhou
 Amount Sponsored : HKD 210,620.29

Project Title : Broadband Sub-diffraction-limit Acoustic Wave Focusing with Two-dimensional Acoustic Rainbow Trapping Metamaterials
 Investigators : J Zhu
 Amount Sponsored : HKD 189,000

Project Title : Hypersonic Turbulent Boundary Layer Transition Delay with Acoustic Metasurface
 Investigators : J Zhu
 Amount Sponsored : HKD 189,000

Projects with Research Student funded by CRG/GRF/ITF/ other external grants

Student Name	Project Title	Supervisor
PhD (Full-Time)		
AHMAD Shakeel	Numerical Investigation of Fog Basking for Water Collection	H Tang, HM Yao
AHMADIGHADIKOLAEI Meisam	Study of Performance and Emissions of Diesel Engine Fueled with Alternative Fuels in Blended and fumigagion Modes	CS Cheung, KF Yung (ABCT)
AI Chunhui	Fluid-structure Interaction of Compliant Vessels with Pulsatile Flows	H Tang
ANSARI Talha Qasim	A Phase-Field Modelling Framework for Localized Corrosion Kinetics	SH Shi
ARIF Muhammad Irsalan	Aeroacoustics of Airfoil Tonal Noise and Its Reduction Using Passive Methods	RCK Leung
BIAN Jing	Analysis and Design of Nonlinear Damping and Its Applications	XJ Jing
CAO Wuxiong	Characterization of Hypervelocity Impact-induced Pitting Damage Based on Active Guided Waves: From Linear to Nonlinear	ZQ Su, BJ Pang (Harbin Institute of Technology, China)
CHEN Long	Localization and Characterization of the Fault in Wheel/Rail System	YS Choy
CHEN Shengyang	Vision-based Localizing and Navigation System for UAV Application	CY Wen
CHI Tianxi	Spectral Analysis and Correlation Study of Skin Blood Flow Oscillation	Y Liu
CHI Yicheng	Ab Initio Chemical Kinetics of Combustion Reactions of Large Straight-Chain Alkanes	P Zhang, CY Wen
CUI Jingyu	Numerical Study on the Dynamics of Primary Cilium in Pulsatile Flow by the Immersed Boundary-Lattice Boltzmann Method	Y Liu, S Chen (Tongji University, China), LL Xiao (Shanghai University of Engineering Science, China)
CUI Zhenxi	Image-based Alignment and Assembly of Cell-Laden Hydrogels under Cell Culture Medium	KH Chu, L Cheng
DING Haoqing	Health Monitoring-oriented Defect Detection for Rail Structures using Nonlinear Guided Ultrasonic Waves: Theory, Simulation and Validation	ZQ Su
DUAN Ran	Moving Target Precise Landing for UAV	P Lu (AAE), LM Zhou
DUONGTHIPHEWA Anchalee	Carbon Fibre Composites with Multi-nanofillers for Lightning Strike Protection	LM Zhou
ECCEL VELLWOCK Andre	Biomimetic Surfaces Topographies as Antifouling Strategies	HM Yao
ESAN Oladapo Christopher	Mathematical Modeling of Fluid Flow and Mass/Charge Transport in Vanadium Redox Flow Batteries	L An, H Tang
FAN E	Numerical Investigation on Reacting Shock-Bubble Interaction	CY Wen
FAN Lei	Nanoscale Precipitation and Mechanical Properties of Coherent Precipitation Strengthened High-Entropy Alloys	ZB Jiao, SQ Shi
FU Jimin	Micro-and Nanotribology of Natural Biomaterials	HM Yao, SQ Shi
FU Yu	Multifunctional Structural Lithium Ion Batteries Based on Carbon Fibre Reinforced Polymer Composites	LM Zhou
GAO He	Inverse Design Method in Acoustic Wave Front Manipulation	J Zhu, YS Choy

Student Name	Project Title	Supervisor
GAO Yang	Interface Mechanics in Advanced Composite Materials	HM Yao
GUO Zhenbin	Biomimetic Tuning of Electrode Materials for High-Performance Li-ion Batteries	HM Yao
HAMEED Imran	Navigation and Control of Mobile Robots on Uncertain and Rough Grounds	XJ Jing
HE Chengming	Binary Droplet Collision and Mixing in Gaseous Environment	P Zhang, RCK Leung
HU Jing	Heterogeneous Nanostructured Composite Electrode Materials for Flexible Supercapacitors	LM Zhou, HM Yao
HU Zhongyu	Hybrid Deterministic-statistical Models based on the Coupling by the Condensed Transfer Function Approach	L Cheng
HUA Yingyu	Optimal Design of Viscoelastic Dynamic Vibration Absorber for Vibration Control of Multi-degree-of-freedom Systems	WO Wong, L Cheng
HUANG Guangyuan	Modelling and Control of Noise Generation from Flow over a Generic Model of Road Vehicle	RCK Leung, ZG Yang (Tongji University, China)
HUANG Kaicheng	Cellular Patterns with Designed Form on Different Surfaces by Negative Dielectrophoresis	KH Chu, L Cheng
IMTIAZ Sumair	Synthesis and Design Strategies of materials for High Energy Density Lithium-sulfur Batteries	GP Zheng, GH Chen
JIANG Xiao	Soot Formation and Evolution Characteristics of Premixed Hydrocarbon Flames	TL Chan
LAI Jiewen	Development of Continuum Robot System for Blood Suction	KH Chu, L Cheng
LI Boyang	Design, Modelling and Control of a Tail-sitter Unmanned Aerial Vehicle	CY Wen
LI Dongfang	Advancement of Close-proximity (CPX) Measurement Methodology for Tyre/Road Noise Radiation in Highly Urbanized City	RCK Leung, WT Hung (CEE)
LI Feilong	The Study of Numerical Algorithm and Nonlinear Ultrasonic Imaging Technique of Early-stage Damages in Structures	F Zou (AAE), ZQ Su
LI Guangzhe	Investigations on Carbon-based Materials for Sodium-based Ion Battery Applications	L An, GH Chen
LI Jie	Investigation of the Evolution Kinetics of Porous Metals during Dealloying by Phase-field Methods	SQ Shi
LI Jingying	Control and Filtering for Nonlinear Networked Control Systems via Fuzzy Model Approach and Its Applications	XJ Jing, XL Huang (Harbin Institute of Technology, China)
LI Meng	Nonlinear Vibration and Energy Harvesting Systems	XJ Jing
LI Quankun	Frequency Domain Methods for Analysis and Characterization of Nonlinearity in Fault Detection	XJ Jing
LI Wenting	Investigation on Different Fracture Behaviors and the Validity of Fracture Criteria in Multi-scale Plastic Deformation Processes	MW Fu
LI Yehai	Development of Grapheme/polymer Composites with Enhanced Electrical and Mechanical Properties	ZQ Su, A Vyas, KT Lau (Swinburne University of Technology, Australia)
LI Yun	Perovskite Solar Cell based on Solution Processing	WWF Leung
LI Zhengchao	Robust Control and Filtering for Systems with State-dependent Uncertainties and its Applications	XJ Jing, JY Yu (Harbin Institute of Technology, China), O KAYNAK (Harbin Institute of Technology, China)

Student Name	Project Title	Supervisor
LI Zhengtong	Design Strategies of Using Urban Corridors in High-rise Urban Areas for Mitigation of the Heat Island Effect and Air Pollution	CY Wen
LIANG Shanjun	Flexible Broadband Acoustic Metamaterials	J Zhu, YS Choy
LIAO Yaozhong	An Innovative Nanocomposites-inspired In-situ Broadband Sensing Network Coating and Its Applications to Acousto-ultrasonics-based Structural Health Monitoring	ZQ Su, LM Zhou, Z Zhang (National Center for Nanoscience and Technology, China)
LIN Dongmei	Temperature Effect of TiO ₂ Nanomaterials on Li/Na-Ion Batteries: Study of Performance, Structural and Transport Properties	LM Zhou, BH Li (Tsinghua University, China)
LIU Hongmei	Computational Fluid Dynamics based Monte Carlo Simulation of Complex Aerosol Dynamics	TL Chan
LIU Mingran	Novel Flexible Nanocomposite Sensors for Monitoring of Vital Signs in Human Body	Y Liu
LIU Shuhong	Spectral Analysis and Correlation Study of Skin Blood Flow Oscillation	Y Liu
LIU Tuo	Multi-dimensional Acoustic Rainbow Trapping Metamaterials	J Zhu, L Cheng
LO Kin Shing Kenneth	Perovskite and Dye-Sensitized Solar Cells with Graphene Enhancement	WWF Leung
LONG Tiehan	Spatial Normal Modes of High-Speed Boundary Layer on Porous Wall	CY Wen
LU Mingzhen	Simulation of Respiratory Flow in Human Upper Airway Model	Y Liu
LYU Linlong	Pre-Lithiated Silicon-Based Lithium Ion Battery and its Performance Optimization	LM Zhou
MA Li	Vibration and Sound Radiation Analysis of Plates Embedded with Acoustic Black Holes (ABHs)	L Cheng
MA Wanyu	Vision-Based Robotic Manipulation of Deformable Objects with Iterative Learning of Mechanical Properties	D Navarro-Alarcon
MUDDASSIR Muhammad	Development of an Automatic Skin Photo-Rejuvenation Treatment Robotic System	D Navarro-Alarcon
NG Ming To	Low-frequency Flow Duct Noise Mitigation by Membrane-type Metamaterial Liner	RCK Leung
PAN Zhefei	Investigations on Direct Ethylene Glycol Fuel Cells using Hydrogen Peroxide as Oxidant	L An, CY Wen
PIAO Jinli	Modelling, Analysis and Design of Bio-inspired Structures with Geometric Nonlinearity	XJ Jing
QADRI Muhammad Nafees Mumtaz	On Energy Harvesting from Open Channel Water Flows Using Passively Oscillating Hydrofoils	H Tang, Y Liu
SHAN Shengbo	Non-linear Shear-horizontal (SH) Waves for Structural Health Monitoring Through Incipient Defect Detect	L Cheng
SU Xiangyu	Design and Development of Formate Fuel Cells	L An, CY Wen
SU Yiyin	Composites Materials with Embedded Nanomaterials Sensors	LM Zhou, ZQ Su
SUN Bo	Thermally Assisted Superelasticity Configuration of NiTi Wires with the Nanocrystalline and Coarse Microstructures	MW Fu, JP Lin (Tongji University, China)
SUN Jingxuan	Study on Design and Transitional Flight of a Vertical Take-off Landing Unmanned Aerial Vehicle	CY Wen
SUN Qiangqiang	Charged Nanofiber Filters for Enhanced Aerosol Filtration	WWF Leung
SUN Ruqi	Design of Dynamic Vibration Absorber with Tunable Damping	WO Wong, L Cheng

Student Name	Project Title	Supervisor
TIAN Xudong	Experimental Study on the Stability and Transition of High-Speed Boundary Layer using ART Metamaterials	CY Wen
ULLAH Sana	Piezoelectric and Pyroelectric Properties of Ferroelectric Composite Containing Two-dimensional Materials	GP Zheng
UY Chun Kit	Theoretical and Numerical Investigation on Vibrational Nonguililibrium Effect in Detonation	CY Wen
WANG Jianbiao	Theoretical and Experimental Investigations on Time-temperature Dependent Viscoelastic Properties of Chalcogenide Glass	HH Ruan, HM Yao
WANG Jingwei	Surface Modification of Electrode Materials with a Modified PEDOT: PSS Conducting and Flexible Polymer Coating	GH Chen, SH Song (Harbin Institute of Technology, China)
WANG Kai	A Structural Health Monitoring Approach based on Contact Acoustic Nonlinearity of Guided Waves: Analytical Modelling, Experimental Validation and Engineering Applications	ZQ Su
WANG Qian	Silicon-based Composites as Anodes for Lithium Ion Batteries	LM Zhou, HM Yao
WANG Shu	Investigation on Aerodynamics of Airfoil at Low Reynolds Number	Y Liu, Y Zhou (Harbin Institute of Technology, China)
WANG Yafeng	Study of the Gas Bubble Behavior of High Burnup Nuclear Fuels using the Phase-Field Methodology	SQ Shi
WANG Zhaokun	Physical Mechanism and Fluidic Control of Floppy Iris Syndrome during Cataract Surgery	H Tang
WEI Long	A Study of Tribology Performance and Airborne Wear Particles from Disc Brakes	YS Choy, CS Cheung
WEN Fuzhen	Third-Harmonic Shear-Horizontal (SH) Waves for Structural Health Monitoring through Incipient Damage Detection	L Cheng
WEN Weisong	GNSS/INS/LiDAR/HD Map-based Localization for Autonomous Vehicles in Super-Urbanized Areas	CY Wen, LT Hsu (AAE)
WU Di	High-order Numerical Method for Capturing the Aeroacoustic-Structural Interaction of a Flexible Panel	RCK Leung, H Xiao (Northwestern Polytechnical University, China)
XIANG Biao	Vibration Dynamics and Control of Magnetically Suspended Rotating Machine	WO Wong
XIONG Jie	Machine Learning Approach for New Advanced Material Design	SQ Shi
XU Lei	Interaction of Nonlinear Ultrasonic Waves with Fatigue Cracks: from Analytical Modeling, through Experimental Validation to Engineering Applications	ZQ Su
YANG Haopeng	Investigation on the Hot Working of Biodegradable Mg-Li Alloy for Biomedical Applications	MW Fu, S To (ISE)
YANG Jianwei	Tomography-based Health Monitoring of Composite Structures Using Fully Diffuse Sensing Networks	ZQ Su
YANG Juntan	Mechanics of Two-dimensional (2D) Materials	HM Yao
YANG Tao	RNAS and LES Studies of Circulation-controlled Fire-Whirls	P Zhang, CY Wen
YANG Weiping	Prediction and Reduction of Tunnel Noise	YS Choy, J Zhu
YANG Xiongbin	Elastic Wave Imaging Using Nonlinear Ultrasonic Features and Phased Array-driven Reverse Time Migration	ZQ Su

Student Name	Project Title	Supervisor
YIN Qifang	Optimization of Mechanical and Electrical Performances of Silicon Electrode in Lithium-ion Batteries : Molecular Dynamics Simulation	HM Yao, LM Zhou
ZAHRA Omar Ibn Elkhatab Abdallah A. E.	A Bio-Inspired Method for Sensorimotor Coordination of Robotic Systems Based on Self-Organising Maps	D Navarro Alarcon
ZHANG Dawei	Experimental Study of Gelled Hypergolic Proellants Ignition by Droplet Collisions	P Zhang, CW Leung
ZHANG Guohao	A Novel V2V Cooperative Positioning Algorithm Based on GNSS for Autonomous Driving in Dense Urban Area	LT Hsu (AAE), CM Yu (AAE)
ZHANG Linli	Structural Wave Manipulation and Applications through Electro-mechanically Enhanced Acoustic Black Hole Effects	L Cheng
ZHANG Xiaoqi	Acoustic Behavior of Micro-Perforated Panels in a Grazing Flow	L Cheng
ZHAO Fuwang	Flexibility and Ground Effects on the Performance of a Flapping Hydrofoil Based Flow Energy Harvester	H Tang
ZHAO Liangjing	Variation of Spectral Characteristic Vasomotion at Different Location of the Arm	Y Liu
ZHENG Junyuan	Study on Size Effects Affected progressive Microforming Process and Deformation Using Sheet Metals and Wire Metals	MW Fu
ZHOU Bingchen	Microstructural Evolution and Mechanical Properties of Nanoscale Co-precipitation-strengthened Steels	ZB Jiao, SQ Shi
ZHOU Pengyu	Design of a New All-inkjet-printed, Flexible, Ultra-broadband Film Sensor Using Nanocomposites for in-situ Acquisition of Dynamic Disturbance	ZQ Su, LM Zhou
ZHOU Quan	Thermal, Combustion and Emission Characteristics of Inverse-Diffusion-Flame Burner Burning Biomass-Derived Syngas	CS Cheung, CW Leung, ZH Huang (Xi'an Jiaotong University, China)
ZHOU Tong	Vibration Analysis of Structures with Space-Dependent Inhomogeneity: Numerical Modeling and Practical Applications	L Cheng
ZHOU Weifeng	Modelling and Controlling of an Autonomous Tail-sitter Vertical Take-off and Landing (VTOL) Unmanned Aerial Vehicles (UAVs)	CY Wen, P Lu (AAE)
ZHOU Zeqi	Synthesis of Transition Metal Phosphosulfide@Carbon Nanocomposite as Anode Materials for Rechargeable Sodium Ion Batteries	GH Chen
ZHU Xuren	Large Eddy Simulation and Experimental Study of Slotted Swirler Combustor with Natural Gas/Synagas Mixtures	P Zhang, CW Leung
ZHU Yinggang	Understanding the Self-healing Effect of Room-temperature Liquid Alloys as the Anode in Lithium Ion Battery	GH Chen

Student Name	Project Title	Supervisor
PhD (Part-Time)		
CHAN Ying Ngai	Soundscape Design and Planning for Learning in Hong Kong	YS Choy
CHAN Yui Ho	Aeroacoustics of Silencing Device in Flow Duct	RCK Leung, YS Choy
FAN Ka Heng	Aeroacoustic-structure Interaction of Flexible Panel Loaded with Unsteady Flow	RCK Leung
LAM Ka Hei	Development of Low Frequency Duct Aeroacoustic Liner Using Metamaterial Technology	RCK Leung
LI Qian	Study on the Multi-scale Structure and Interfacial Properties of Plant Fiber Reinforced Composites	LM Zhou, Y Li (Tongji University, China)
LIU Yao	Investigation on Shock Induced Stripping Breakup Process of a Liquid Droplet	CY Wen
LU Bo, Daniel	Robotic Knot Tying through a Spatial Trajectory with a Visual Servoing System	KH Chu, L Cheng
MA Hei Lam	Bonding Strength Enhancement of Carbon Fiber Reinforced Polymer Plates at Cryogenic Conditions by using Coiled Carbon Nanotube / Epoxy Adhesive	SQ Shi, KT Lau (Swinburne University of Technology, Australia)
MAK Yi Wah, Eva	Chitosan-based Nanofiber Scaffold as Applied to Wound Healing	WWF Leung
ZHANG Hao	Numerical Study of In-flight Ice Accretion on a Circular Cylinder and an Airfoil	CY Wen
MPhil (Full-Time)		
CHANG Ching Wei	Path-planning and Trajectory Optimization for Unmanned Aerial Vehicle Bridge Inspection System	CY Wen
CHEN Zongnan	The Application of Dielectric Barrier Discharge Plasma Actuators on Active Flow Control around a Bluff Body	CY Wen
LIN Jiajie	Microscopic Progressive Compound Process Development for Pogo Pin and Deuterogenic Research of Size Effect in Micro Forming	MW Fu
LIU Yutong	Suppression of Li Dendrite using MOFs as Scaffolds	GH Chen
SHI Xingyi	Experimental Investigations on Vanadium-Air Redox Flow Batteries	L An, HH Ruan
MPhil (Part-Time)		
HOU Ruoyang	Numerical Modeling of Aeroacoustics with Porous Material	RCK Leung

Research Collaborations

In the year of 2018/2019, the Department has worked hard to establish collaborative research activities with the following educational institutions and organizations:

Institution / Organization	Region
AGH University of Technology	Poland
Alfa Laval, Sweden	Sweden
Argonne National Lab	USA
Avalon	Taiwan
Beihang University	Mainland China
Beijing Institute of Technology	Mainland China
Beijing Jiaotong University	Mainland China
Beijing University of Science and Technology	Mainland China
Beijing University of Technology	Mainland China
Blickson Limited	Hong Kong
Brandenburg University of Technology Cottbus–Senftenberg	Germany
Central South University	Mainland China
Centre for Research and Advance Studies (CINVESTAV)	Mexico
China Jiliang University	Mainland China
Chinese Academy of Sciences	Mainland China
Chongqing University	Mainland China
City College of New York	USA
City University of Hong Kong	Hong Kong
College of France	France
COMAC Beijing Aeronautical Science & Technology Research Institute	Mainland China
Concordia University	Canada
Curtin University	Mainland China
Dalian Institute of Chemical Physics, Chinese Academy of Sciences	Mainland China
Dalian University of Technology	Mainland China
DJI Co.	Mainland China
Edinburgh Centre for Robotics	UK
French National Center for Scientific Research	France
GP Battery	Hong Kong
Graduate School at Shenzhen, Tsinghua University	Mainland China
Guilin University of Technology	Mainland China
Harbin Engineering University	Mainland China
Henan University	Mainland China
Hong Kong Construction Industrial Council	Hong Kong
Hong Kong Electrical & Mechanical Service Department	Hong Kong
Hong Kong Environmental Protection Department	Hong Kong
Hong Kong Jockey Club	Hong Kong

Institution / Organization	Region
Hong Kong Non Woven Association	Hong Kong
Hong Kong University of Science and Technology	Hong Kong
Huazhong University of Science and Technology	Mainland China
Huizhou Qichen New Tech	Mainland China
Imperial College London	UK
INSA Toulouse	France
INSA-Lyon	France
Institut Pascal / SIGMA Clermont	France
Institute for the Development and Quality, Macau	Macau
Institute of Metal Research, Chinese Academy of Sciences	Mainland China
Jilin University	Mainland China
Jinan University	Mainland China
Le Mans Université	France
Man Yue Electronic Company Limited	Hong Kong
Mass Transport Railroad (MTR)	Mainland China
Massachusetts Institute of Technology	USA
MayAir	Mainland China
Midea	Mainland China
Monash University	Australia
Naitonal Taipei University of Technology	Taiwan
Nanjing university of Aeronautics and Astronautics	Mainland China
Nanyang Technological University	Singapore
National Research Council	Italy
National-provincial Joint Engineering Research Center of High Temperature Materials and Lining Technology, Wuhan	Mainland China
Ningbo Material Technology And Engineering Institute	Mainland China
Northwestern Polytechnical University	Mainland China
Office of Naval Research, U.S.A.	USA
Pacific Northwest National Lab	USA
Peak Tramways Company, Limited	Hong Kong
Peking University	Mainland China
Penn State University	USA
Pennsylvania State University	USA
Peter the Great St Petersburg Polytechnic University	Russia
Politecnico di Milano	Italy
Purdue University	USA
Qiqihar University	Mainland China
RODS Technology Company Ltd	Hong Kong
Shanghai Jiaotong University	Mainland China

Institution / Organization	Region
Shanghai University	Mainland China
Shenyang Institute of Automation, CAS	Mainland China
Shenzhen Qichen New Tech Ltd.	Mainland China
Shenzhen University	Mainland China
Shenzhen μ Precision Technology Limited	Mainland China
Sichuan University	Mainland China
South China University of Technology	Mainland China
Southeast University	Mainland China
Southern University of Science and Technology	Mainland China
Syncrude	Canada
Technical University of Munich	Germany
The State Key Laboratory of Refractories and Metallurgy	Mainland China
Tianjin University	Mainland China
Tongji University	Mainland China
University of Alberta	Canada
University of Hong Kong	Hong Kong
University of Illinois at Urbana-Champaign	USA
University of Liege	Belgium
University of Montpellier / LIRMM	France
University of Naples "Federico II"	Italy
University of Paris, UTC	France
University of Science and Technology Beijing	Mainland China
University of Science and Technology of China	Mainland China
University of Southern Queensland	Australia
University of Sydney	Australia
University of Tasmania	Australia
University of Toronto	Canada
University of Toulon	France
University of Waterloo	Canada
Western Sydney University	Australia
Wuhan University of Science and Technology	Mainland China
Xiamen University	Mainland China
Xian Jiaotong University	Mainland China
Zhejiang University	Mainland China
Zhengzhou University	Mainland China

Research Outputs

Summary	
Patent	7
Authored Book	10
Journal Paper	197
Conference Proceeding	84
Total no. of archival publications	
	298

Patent

- JING, X.J. and SUN, B., "Suspension Design of Tracked Vehicles 履带车辆悬架隔振装置", PRC patent (Utility model 实用新型), No. 201721666585.6 (2018).
- JING, X.J., "Vibration Isolation Device, 隔振装置", PRC patent (Utility model), No. 201721668481.9 (201820232064.8) (2018).
- 郭迎庆, 冯通, 徐赵东, 景兴建, "一种地震模拟振动台的实验装置", PRC patent (Utility model 实用新型), No. ZL201820946292.1 (2018).
- 徐赵东, 董堯榮, 郭迎庆, 王軍健, 陳實, 李陽, 陳笑, 景兴建, "實時混合動力實驗方法", PRC patent (Invention 發明專利), No. ZL201810824215.3 (2018).
- JING, X.J., "一種具有抗拉拔性能的仿生多維隔減振裝置", PRC Patent (Utility Model), No. ZL201822049922.8 (2018).
- SU, Z., ZHOU, L.M., ZENG, Z., LIU, M. and XU, H., "Coated Nanofiller/Polymer Composite Sensor Network for Guided-wave-based Structural Health Monitoring", US Patent, No. US 10,012,553 B2 (2018).
- SU, Z., ZHOU, L.M., QIU, L., XU, H., ZENG, Z. and LIU, M., "Resistance-voltage Transformation System for Sensors in Dynamic Strain Measurement and Structural Health Monitoring", US Patent, No. US 9,863,824 B1 (2018).

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- AN, L. and ZHAO, T.S., "Anion Exchange Membrane Fuel Cells: Principles, Materials and Systems", Lecture Notes in Energy, Springer, ISBN: 978-3-319-71370-0 (2018).
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- LAI, X.M., FU, M.W. and PENG, L.F., "Sheet Metal Meso- and Microforming and Their Industrial Applications", Taylor & Francis Group, Page count: 29 (2018).
- LI, H. and FU, M.W., "Deformation Based Processing of Materials: Behavior, Performance, Modelling, and Control", Elsevier, November (2018).
- JING, X.J. and VAKAKIS, A.F., "Exploring Nonlinear Benefits in Engineering", a special issue in Mechanical Systems and Signal Processing (2018).
- CIAPPI, E., DE ROSA, S., FRANCO, F., GUYADER, J.L., HAMBRIC, S., LEUNG, R.C.K. and HANFORD, A.D., "Flinovia-Flow Induced Noise and Vibration Issues and Aspects II", Springer, ISBN 978-3-319-76779-6 (2018).
- XIAO, L.L., YAN, W.W., LIU, Y., CHEN, S. and FU, B.M., "Modeling Cell Adhesion and Extravasation in Microvascular System", In Molecular, Cellular, and Tissue Engineering of the Vascular System, Springer, Cham, pp. 219-234 (2018).
- SU, Z., YUAN, S. and SOHN, H., "Proceedings of the 7th Asia Pacific Workshop on Structural Health Monitoring (APWSHM-2018)", Bad Breisig: NDT.net, ISBN: 978-3-00-060359-4, 1241pp (2018).
- VYAS, A., "Internationalization of Higher Education in Hong Kong: Policies, Development and Emerging Trends", in A. Farazmand (Ed.), Global Encyclopedia of Public Administration and Public Policy. Switzerland: Springer International Publishing AG, 15pp (2018).
- YAO, H. and FU, J., "青鱼咽齿的仿生力学研究", in book "生物材料与仿生力学" Edited by FENG X.Q. (in Chinese) (2018).

Journal Paper

1. PAN, Z.F., AN, L., ZHAO, T.S. and TANG, Z.K., "Advances and Challenges in Alkaline Anion Exchange Membrane Fuel Cells", *Progress in Energy and Combustion Science*, Vol. 66, pp.141-175 (2018).
2. WU, Q.X., PAN, Z.F. and AN, L., "Recent Advances in Alkali-doped Polybenzimidazole Membranes for Fuel Cell Applications", *Renew. Sustain. Energy Rev.*, Vol. 89, pp.168-183 (2018).
3. HUANG, B., PAN, Z.F., SU, X.Y. and AN, L., "Tin-based Materials as Versatile Anodes for Alkali (Earth)-ion Batteries", *J. Power Sources*, Vol. 395, pp.41-59 (2018).
4. HUANG, B., PAN, Z.F., SU, X.Y. and AN, L., "Recycling of Lithium-ion Batteries: Recent Advances and Perspectives", *J. Power Sources*, Vol. 399, pp.274-286 (2018).
5. YU, Y.G., YANG, X., ZHANG, X.B., ZHAO, Y.L., AN, L., HUANG, M.Y., CHEN, G. and ZHANG, R.Q., "Engineering the Band Gap States of the Rutile TiO₂(110) Surface by Modulating the Active Heteroatom", *Angew. Chem. Int. Ed.*, Vol. 57, pp.8550-8554 (2018).
6. CHEN, R., XIA, M., ZHU, X., LIAO, Q., YE, D.D., AN, L., YU, Y., LONG, J. and ZHANG, W., "A Visible-light Responsive Micro Photocatalytic Fuel Cell with Laterally Arranged Electrodes", *Applied Thermal Engineering*, Vol. 143, pp.193-199 (2018).
7. KHOR, A., LEUNG, P., SANZ, L., FLOX, C., XU, Q., AN, L., WILLS, R., MOHAMED, M.R., MORANTE, J. and SHAH, A., "Review of Zinc-based Hybrid Flow Batteries: From Fundamentals to Applications", *Materials Today Energy*, Vol. 8, pp.80-108 (2018).
8. TAN, L., LI, X.H., WANG, Z.X., GUO, H.J., WANG, J.X. and AN, L., "PC/MWCNT Composite-coated Separator for Improving the Electrochemical Performances of Lithium Sulfur Battery", *ChemElectroChem*, Vol. 5, pp.71-77 (2018).
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10. CHAN, T.L., LIU, S.Y. and YUE, Y., "Nanoparticle Formation and Growth in Turbulent Flows Using the Bimodal TEMOM", *Powder Technology*, Vol. 323, pp.507-517 (2018).
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12. LIU, H.M. and CHAN, T.L., "Two-component Aerosol Dynamic Simulation Using Differentially Weighted Operator Splitting Monte Carlo Method", *Applied Mathematical Modelling*, Vol. 62, pp.237-253 (2018).
13. XIA, Y., LIN, J.Z., KU, X.K. and CHAN, T.L., "Shear-induced Autorotation of Freely Rotatable Cylinder in a Channel Flow at Moderate Reynolds number", *Physics of Fluids*, Vol.30, AN.: 043303, 18pp (2018).
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15. WANG, W., HU, D.P., PAN, Y.Q., NIU, L.J. and CHEN, G.H., "Multiphase Transport Modeling for Freeze-drying of Aqueous Material Frozen with Prebuilt Porosity", *International Journal of Heat and Mass Transfer*, Vol. 122, pp.1353-1365 (2018).
16. GAO, M., BAO, Y.B., QIAN, Y.X., DENG, Y.F., LI, Y.W. and CHEN, G.H., "Porous Anatase-TiO₂(B) Dual-Phase Nanorods Prepared from in Situ Pyrolysis of a Single Molecule Precursor Offer High Performance Lithium-Ion Storage", *Inorganic Chemistry*, Vol. 57, No. 19, pp.12245-12254 (2018).
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18. LIU, Y.M., QIN, X.Y., ZHANG, S.Q., LIANG, G.M., KANG, F.Y., CHEN, G.H. and LI, B.H., "Fe₃O₄-Decorated Porous Graphene Interlayer for High-Performance Lithium-Sulfur Batteries", *ACS Applied Materials & Interfaces*, Vol. 10, No. 31, pp.26264-26273 (2018).
19. WANG, W., YANG, J., HU, D.P., PAN, Y.Q., WANG, S.H. and CHEN, G.H., "Experimental and Numerical Investigations on Freeze-drying of Porous Media with Prebuilt Porosity", *Chemical Physics Letters*, Vol. 700, pp.80-87 (2018).
20. YANG, Y.B., ZHANG, L.T., XU, H., QIN, X.S., DENG, Y.F. and CHEN, G.H., "Net-Structured Filter of Co(OH)₂-Anchored Carbon Nanofibers with Ketjen Black for High Performance Li-S Batteries", *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*, Vol. 6, No.12, pp.17099-17107 (2018).
21. ZHUANG, H., XIE, Y., TAN, H.Q., DENG, Y.F., LI, Y.W. and CHEN, G.H., "CoFex-CoFe₂O₄/N-doped Carbon Nanocomposite Derived from in Situ Pyrolysis of a Single Source Precursor as a Superior Bifunctional Electrocatalyst for Water Splitting", *Electrochimica ACTA*, Vol. 262, pp.18-26 (2018).
22. LEI, C.J., WANG, F.F., YANG, J., GAO, X.F., YU, X.Y., YANG, B., CHEN, G.H., YUAN, C., LEI, L.C. and HOU, Y., "Embedding Co₂P Nanoparticles in N-Doped Carbon Nanotubes Grown on Porous Carbon Polyhedra for High-Performance Lithium-Ion Batteries", *Industrial & Engineering Chemistry Research*, Vol. 57 No. 39, pp.13019-13025 (2018).
23. ZHANG, M.M., LI, X.Y., FAN, S.Y., ZENG, L.B., YIN, Z.F., LIAN, T.T. and CHEN, G.H., "Highly Oriented SnS₂/RGO/Ag Heterostructures for Boosting Photoelectrochemical and Photocatalytic Performances via Schottky and RGO-n Dual-heterojunctions Interfacial Effects", *Applied Catalysis A-General*, Vol. 563, 118-126 (2018).
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27. ZHANG, L.T., DAMBOURNET, D., IADECOLA, A., BATUK, D., BORKIEWICZ, O.J., WIADEREK, K.M., SALAGER, E., SHAO, M.H., CHEN, G.H. and TARASCON, J.M., "Origin of the High Capacity Manganese-Based Oxyfluoride Electrodes for Rechargeable Batteries", *Chemistry of Materials*, Vol. 30, No. 15, pp.5362-5372 (2018).
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31. ZHANG, C., CHENG, L., QIU, J.H. and WANG, H.Y., "Damage Detection Based on Sparse Virtual Element Boundary Measurement Using Metal-core Piezoelectric Fiber", *Structural Health Monitoring: An International Journal*, Vol. 17, No. 1, pp.15-23 (2018).
32. ZHOU, T. and CHENG, L., "A Resonant Beam Damper Tailored with Acoustic Black Hole Features for Broadband Vibration Reduction", *Journal of Sound and Vibration*, Vol. 430, pp.174-184 (2018).
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2. CHEN, G., "The Future Teaching of Chemical Engineering", International Symposium on Emerging Engineering Education, 8-9 April, Tianjin (2018).
3. LI, M.C.K. and CHEN, G., "Microwave-Assisted Solvothermal Synthesis of LiFePO₄ as Cathode Material of Lithium Ion Battery", The 19th International Meeting on Lithium Batteries, Poster, 17-22 June, Kyoto, Japan (2018).
4. LIU, Q., LAU, K.C. and CHEN, G., "oCVD Coating of Conductive Polymers on Nanoparticles for Cathode Materials of Lithium Ion Batteries", The 7th East Asia Mechanical and Aerospace Engineering Workshop, Keynote lecture, 26-28 November, Sapporo, Japan (2018).
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7. ZHANG, L., SHAO, M.H., TARASCON, J.-M. and CHEN, G., "Understanding the in Situ Fluorination of High Capacity Cathode Materials for Rechargeable Batteries", Nature Conference on Renewable Energy, Invited lecture, 12-15 January, Shenzhen (2018).
8. CHENG, L., "Sound Absorption of Micro-Perforated Panels in Complex Vibroacoustic Environment", 47th International Congress and Exposition on Noise Control Engineering (Inter-Noise 2018), 26-29 August, Chicago, USA (2018).
9. CHENG, L. and MA, L., "Characterization of Acoustic-Black-Hole-Induced Transonic Boundary Changes for Sound Radiation Analyses of Plates", ABH2018: Acoustic Black Holes and Structured Plates for Vibration, Control, 3-4 May, Le

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12. ZHANG, X.Q. and CHENG, L., "Numerical Studies of the Acoustic Impedance of Micro-Perforated Panels under Grazing Flow", 25th International Congress on Sound and Vibration (ICSV25), 8-12 July, Hiroshima, Japan (2018).
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27. YANG, H.P., LI, X.L. and FU, M.W., "Investigation on Semi-solid Forming of A356 Alloy for Fabrication of Micro-scaled and Fine-pitched Pillar Parts for Semiconductor and Microelectronics Applications", The 4th International Conference on Metallic Materials and Processing (ICMMP 2018), 18-22 June, Xi'an, China (2018).
28. JING, X.J., "Analysis and Design of a Bio-inspired Anti-vibration Exoskeleton for Manipulating Vibrating Tools", 25th int. conf. on sound and vibration, 8-12 July, Hiroshima, Japan (2018).
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 38. LEUNG, W.W.F., "Novel Nanofiber Photocatalyst in Purifying Air and Water", NN18 Nanotechnology Conference, 2-5 July, Thessaloniki, Greece (2018).
 39. LEUNG, W.W.F., "A Novel Semiconductor Nanofiber with Superb Charge Conductivity for Energy and Environmental Applications", Nanotechnology Division, Am. Inst. Chemical Engineers Annual Meeting, 28 October-2 November, Pittsburgh, PA., USA (2018).
 40. LEUNG, W.W.F., "Advances in Centrifugal Separation in Biotechnology", Food, Pharmaceutical & Bioengineering Division, Am. Inst. Chemical Engineers Annual Meeting, 28 October-2 November, Pittsburgh, PA., USA (2018).
 41. LEUNG, W.W.F., "Rotating Microchannel with Subcritical and Supercritical Mode", 8th East Asia Mech and Aero Workshop, 1 December, PoyU, Hong Kong (2018).
 42. GUO, H.F., LEUNG, W.W.F. and REN, Y., "CFD Investigation into Transition from Depth to Surface Filtration during Loading a Nanofiber Filter Using Nano-aerosols", FILTECH Conference, 13-15 March, Cologne, Germany (2018).
 43. LI, Y. and LEUNG, W.W.F., "Embedded Graphene Nanofibers in Perovskite layer of Perovskite Solar Cell", NN18 Nanotechnology Conference, 2-5 July, Thessaloniki, Greece (2018).
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 48. VICTOROVA, M., NAVARRO-ALARCON, D. and ZHENG, Y.P., "3D Ultrasound Imaging of Scoliosis with Force-Sensitive Robotic Scanning", Int. Conf. Robotic Computing (IRC), 31 January-2 February, California, USA, pp.1-7 (2018).
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 50. LIN, C., RUAN, H.H. and SHI, S.Q., "Phase-field Modelling of Pitting Corrosion under Mechanical Deformation", 8th East Asia Mechanical and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).
 51. WANG, J.B. and RUAN, H.H., "Anomalous Double Peaks of the First Flexural Vibration Mode of a Glass Beam – Is It an Indication of the Fractional Behaviour", Chinese Materials Conference 2018, 12-16 July, Xiamen, China (2018).
 52. SHI, S.Q., "Modeling of Gas Bubble Evolution in Nuclear Fuels", 14th International Conference on Computer Simulation of Radiation Effect in Solids 2018, 17-22 June, Shanghai (2018).
 53. ANSARI, T.Q. and SHI, S.Q., "Multi-phase-field Model of Localized Corrosion Kinetics with Corrosion Products Formation", 8th East Asia Mechanical and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).
 54. SHI, S.Q. and XIAO, Z.H., "Phase-Field Modeling of Gas Bubble Evolution in Nuclear Fuels", TMS Annual Meeting 2018, 11-15 March, Phoenix, USA (2018).
 55. SHI, S.Q. and XIAO, Z.H., "A Quantitative Phase-Field Model for Gas Bubble Damage Evolution in Nuclear Fuels", International Conference on Structural Fatigue & Fracture: Theory and Experimental Technology, 12-15 January, Haikou, China (2018).
 56. SHI, S.Q. and XIAO, Z.H., "Modeling of Gas Bubble in Nuclear Fuels", International Conference on Nuclear Engineering, 22-26 July, London (2018).
 57. SHI, S.Q., ANSARI, T.Q. and XIAO, Z.H., "Phase Field Modeling of Pitting & Crevice Corrosion", TMS Annual Meeting 2018, 11-15 March, Phoenix, USA (2018).
 58. WANG, Y.F., XIAO, Z.H. and SHI, S.Q., "Study of Gas Bubble Behavior for High Burnup Nuclear Fuels Using the Phase Field Methodology", 8th East Asia Mechanical and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).
 59. WANG, K., SU, Z. and YUAN, S., "Evaluation of Crack Orientation Using Fatigue Crack-induced Contact Acoustic Nonlinearity", in Proceedings of the SPIE (Vol. 10600, Proceedings of SPIE Conference on Smart Structures/NDE (Health Monitoring of Structural and Biological Systems XII)), Denver, CO., USA, 4-8 March, pp.1060009-1-11 (2018).
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 62. ZHANG, Z., XIAO, Y. and SU, Z., "Continuous Monitoring of Tightening Condition of Bolted Composite Joints Using Intrinsic Mode Functions of Acoustic Emission Signals", Proceedings of the 7th Asia Pacific Workshop on Structural Health Monitoring (APWSHM-2018), 12-15 November, Hong Kong, ISBN: 978-3-00-060359-4, pp.18-25 (2018).
 63. LIAO, Y., ZHOU, P., ZHOU, L.M. and SU, Z., "An Inkjet-printed, Nanocomposites-inspired Sensor Network for Acousto-ultrasonics-based Structural Health Monitoring", Proceedings of the 9th European Workshop on Structural Health Monitoring (EWSHM-9), 10-13 July, Manchester, UK (2018).
 64. SALUNKGE, P., TANG, H. and WU, Y., "Enhancement of Aerodynamic Performance of a Wing Model Using an Array of Slotted Synthetic Jets", 5th International Conference on Experimental Fluid Mechanics, 2-4 July, Munich, Germany (2018).
 65. VYAS, A. and WONG, W.O., "Learning Enhancement in Engineering: Simulation and Experimentation in Complex Systems", Hong Kong Educational Research Association International Conference, 14-15 December, Hong Kong (2018).
 66. VYAS, A., LEUNG, C.W. and WONG, W.O., "Development Student Driven Learning in Engineering", International Conference on Education (under ICBASS 2018), 27-29 March, Kyoto, Japan (2018).
 67. WEN, C.Y. and SUN, J.X., "Project-based Aircraft Design Education at the Hong Kong Polytechnic University", Asian Workshop on Aircraft Design Education AWADE 2018, Nanjing University of Aeronautics and Astronautics (NUAA), 14-18 October, Nanjing, China (2018).
 68. JUAN, Y.H., WEN, C.Y., YANG, A.S., BLOCKEN, B. and LEE, Y.T., "Potential Wind Power Utilization in Diverging Passages between Two High-Rise Buildings", Passive and Low Energy Architecture (PLEA 2018), 10-12 December, Hong Kong (2018).
 69. JUAN, Y.H., WEN, C.Y., SU, Y.M., LEE, Y.T. and YANG, A.S., "A Preliminary Assessment of Potential Wind Power Utilization in the Leeward Side of High-Rise Buildings", 4th International Conference On Building Energy, Environment (COBEE2018), 5-9 February, RMIT, Melbourne, Australia (2018).
 70. ZHANG, Z.J., WEN, C.Y., LIU, Y.F., ZHANG, D.K. and JIANG, Z.L., "Numerical Simulation of Aluminum Dust Detonation with Polydisperse Particle Size Distribution", 2018 International Workshop on Intensive Loading and Its Effects, 30 November-2 December, Beijing, China (2018).
 71. LI, B., ZHOU, W.F., SUN, J.X, WEN, C.Y. and CHEN, C.K., "Model Predictive Control for Path Tracking of a VTOL Tailsitter UAV in an HIL Simulation Environment", 2018 AIAA Modeling and Simulation Technologies Conference, AIAA Science and Technology Forum and Exposition 2018 (SCITECH), 8-12 January, Gaylord Palms, Kissimmee, Florida, U.S.A (2018).
 72. XIANG, B. and WONG, W.O., "Suspension Characteristics of Magnetically Suspended Frame in Inertially Stabilized Platform", IEEE-PEMC 2018-18th International Conference on Power Electronics and Motion Control, 26-30 August, Budapest, Hungary (2018).
 73. VYAS, A., LEUNG, C.W. and WONG, W.O., "Development of Student Driven Learning in Engineering", Education (under ICBASS 2018), 27-29 March, Kyoto, Japan (2018).
 74. XIA, X. and ZHANG, P., "Vortex Sheet Formation of Flickering Buoyant Diffusion Flames", The 8th East Asia Mechanical

and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).

75. ZHANG, Z. and ZHANG, P., "A Practical Pressure-dependent Droplet Collision Model for Lagrangian Simulation of Impinging Sprays under High Ambient Pressures", The 8th East Asia Mechanical and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).
76. HE, C., XIA, X. and ZHANG, P., "Viscous Dissipation of Bouncing of Bouncing Droplets Undergoing Off-center Collision", The 8th East Asia Mechanical and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).
77. WU, Q., LI, Y., KANG, N. and ZHANG, P., "Impact Analysis of Gas Compressibility to High-speed Oil Droplet in Secondary Breakup", China National Symposium on Combustion 2018, 13-16 September, Harbin, China (2018).
78. CHI, Y., MENG, Q., ZHANG, L. and ZHANG, P., "High-level Theoretical Thermochemistry Study on Hydrogen Abstraction Reactions of Large Straight-chain Alkanes Molecules $C_nH_{2n+2} + (H, OH, HO_2)$ Radicals", China National Symposium on Combustion 2018, 13-16 September, Harbin, China (2018).
79. CHI, Y., ZHU, Y., MENG, Q., ZHANG, L. and ZHANG, P., "Towards High-level Theoretical Studies of Aviation Kerosene Molecules: An ONIOM[QCISD(T)/CBS:DFT] Study on Hydrogen Abstraction Reaction of Large Straight-chain Alkanes Molecules $C_nH_{2n+2} + (H, OH, HO_2)$ Radicals", The 8th East Asia Mechanical and Aerospace Engineering Workshop, 1-3 December, Hong Kong (2018).
80. ZHENG, G.P., "First-principles Calculations on the Multiferroic Properties of Two-dimensional Materials", 19th International Conference on the Science and Application of Nanotubes and Low-dimensional Materials, 15-20 July, Beijing, China, (2018).
81. ZHENG, G.P., "Simulation on the Effects of Glass-glass Interfaces on the Plastic Deformation of Nano-glasses", TMS 147th Annual Meeting Supplemental Proceedings, 11-15 March, Phoenix, USA, (2018).
82. ZHENG, G.P., "First-principles Calculations on the Multiferroic Properties of Two-dimensional Oxides", TMS 147th Annual Meeting Supplemental Proceedings, 11-15 March, Phoenix, USA, (2018).
83. ULLAH, S. and ZHENG, G.P., "The Effects of Additions of Two-dimensional Graphitic- C_3N_4 on the Dielectric, Ferroelectric and Electro-caloric Properties of P(VDF-TrFE) Copolymers", International Conference of Advanced Functional Materials, 27-30 August, Nanjing, China (2018).
84. LIAO, Y., ZHOU, P., ZHOU, L.M. and SU, Z., "An Inkjet-printed, Nanocomposites-inspired Sensor Network for Acousto-ultrasonics-based Structural Health Monitoring", in Proceedings of the 9th European Workshop on Structural Health Monitoring (EWSHM-9), 10-13 July, Manchester, UK (2018).

Consultancy Projects

Member of the Department continued to make contributions to be the profession by engaging in high level consultancies for international organizations, government departments, private sector firms and community groups.

Below are some of our clients:

Blickson Limited
Electrical and Mechanical Services Department, HKSAR
Environmental Protection Department, HKSAR
Galen MRI Systems
Hong Kong Police Force
Institute for the Development and Quality, Macau
Institute of Metal Research, Chinese Academy of Sciences
Magen Technology
Midea Group
Nanjing University of Posts and Telecommunications
The Hong Kong Jockey Club
羅客教育資訊諮詢 (上海) 有限公司

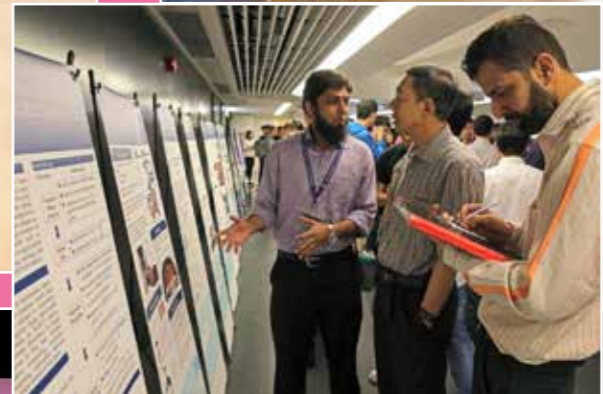
Departmental Seminar Series

The Department regularly holds research seminars on a wide variety of topics delivered by distinguished visiting researchers or external invited speakers with the aim of advancing research by exchanging knowledge and ideas within the field of Mechanical Engineering.

Date	Speaker/ Affiliation	Seminar Title
4-Jul-2018	Dr José Guadalupe Romero Department of Digital systems, ITAM, Mexico	Energy Shaping of Mechanical Systems via PID Control
11-Jul-2018	Dr Wenwen Song Steel Institute, RWTH Aachen University, Germany	Overcome the strength-ductility trade-off in steels by a novel short-range ordering strengthening concept
19-Jul-2018	Dr Zhongquan Charlie Zheng Aerospace Engineering, University of Kansas, Lawrence, USA	Time-Domain Simulation of Acoustic Propagation in Complex Environments
7-Aug-2018	Prof Alexander V. Fedorov Department of Aeromechanics and Flight Engineering, Moscow Institute of Physics and Technology	Boundary Layer Transition Talk Series "Basic Issues of Laminar Flow Control for High-Speed Boundary-Layer Flows"
15-Aug-2018	Dr Cheng Yang School of Mechanical Engineering, Shanghai Jiao Tong University	Exploring microperforated panel designs for duct noise control
22-Aug-2018	Dr Yu Zhibin University of Glasgow	Dynamic and flexible thermodynamic power cycles for efficient waste heat recovery
23-Aug-2018	Tiffany Hiu Man YIP CUHK T Stone Robotics Institute, The Chinese University of Hong Kong	Development of a Collaborative Surgical Robot Assistant for Laparoscopic Hysterectomy
4-Sep-2018	Prof. Heow Pueh LEE Department of Mechanical Engineering, National University of Singapore	From Membrane- to Plate-Type Acoustic Metamaterials: Towards Large-Scale Noise Control Applications
25-Oct-2018	Prof. Wallace Woon-Fong LEUNG Mechanical Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong	Improvements in Perovskite solar cells
26-Oct-2018	Prof. Chieh-Li Chen Department of Aeronautics and Astronautics, National Cheng Kung University, Taiwan	Image Processing and Machine Vision to Measurement, Motion Control and Automation quantification
29-Oct-2018	Prof. Fei DUAN School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore	"From Spray Cooling to Droplet Impacting and Droplet Train Impingement"
1-Nov-2018	Prof. Qiang XU AIST-Kyoto University Chemical Energy Materials Open Innovation Laboratory (ChEM-OIL), Japan; School of Chemistry and Chemical Engineering, Yangzhou University, China	Nanostructured Materials for Energy Applications
26-Nov-2018	Prof. Wieslaw J. Staszewski AGH University of Science and Technology, Krakow, Poland	Nonlinear and time-variant behaviour for structural damage detection - recent developments
3-Dec-2018	Prof. Ken Loh University of California, San Diego	Warfighter Protection and Structural Health Monitoring

Date	Speaker/ Affiliation	Seminar Title
4-Dec-2018	Prof. David L.S. Hung University of Michigan-Shanghai Jiao Tong University Joint Institute, Institute of Automotive Engineering, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China	Flash-boiling Spray Behavior and Combustion in Spark Ignition Direct-Injection Engine
17-Jan-2019	Prof. Kirill V Horoshenkov University of Sheffield, UK	How many parameters do we really need to predict the acoustical properties of porous media accurately?
1-Apr-2019	Dr Karinne Ramirez Postdoctoral Researcher at the Institute for Cognitive Systems from the Technical University of Munich (TUM)	Robots That Reason: When AI Meets Robotics
9-Apr-2019	Dr Emmanuel Dean Senior Researcher, Institute for Cognitive Systems, Technical University of Munich (TUM), Germany	From Multimodal Tactile Signals to Compliant Control Using Robot Skin
15-Apr-2019	Dr Jianzhou Zhu Director of Su-Cheng Centre for Fundamental and Interdisciplinary Sciences, Nanjing, and Adjunct Prof of Hohai University	dD (d-dimensional) flows and cylindrically reduced passive scalars
22-May-2019	Prof. Jerry Y.S. Lin Department of chemical engineering, Arizona State University, USA	2D Structured Graphene Oxide Membranes for Gas Separation
23-May-2019	Dr Zhao-Li Gao NSF Nano/Bio Interface Center, Department of Physics and Astronomy, University of Pennsylvania	All-electronic Nano-biosensors Based on Graphene Transistors
24 May 2019	Prof. Wallace Woon-Fong LEUNG Mechanical Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong	Challenges to Centrifugal Separation, the key to Biopharmaceutical Drug Production from Living Organisms
27-May-2019	Prof. Wanqin Jin State Key Laboratory of Materials-Oriented Chemical Engineering, Nanjing Tech University	Tuning the Interlayer Channels of GO Membranes for Molecule or Ion Transport
28-May-2019	Prof. J. Woody Ju University of California, Los Angeles, USA	Size-dependent Probabilistic Damage Micromechanics and Toughening Mechanism for Particle/Fiber Reinforced Composites
10-Jun-2019	Prof. Jeong-Guon Ih Korea Advanced Institute of Science and Technology (KAIST)	Research Activities in the Acoustics Lab at KAIST
21-Jun-2019	Prof. Hong Wang MGI Center and the School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai, China	Data-Driven: Future of the Materials Science

Highlights of the Year



Staff Achievements and Research Development

PolyU is ranked 29 by ARWU in Mechanical Engineering

The Hong Kong Polytechnic University (PolyU) has continued to make major strides in the world ranking. In a recent release at the “ShanghaiRanking’s Global Ranking of Academic Subject” published on 17 July 2018, PolyU has made a significant rise in the subject of Mechanical Engineering from last year’s 47th to this year’s 29th in Academic Ranking of World Universities (ARWU).

PolyU is the only University in Hong Kong ranked top 50 in the world. The ranking is based on the following indicators:

- Number of papers authored by an institution in an Academic Subject during the period of 2012 – 2016. Data are collected from Web of Science and InCites.
- Category Normalized Citation Impact during the period of 2012 – 2016. Data are collected from InCites database.
- International collaboration during the period of 2012 – 2016. Data are collected from InCites database.
- Number of papers published in Top Journals in an Academic Subject during the period of 2012-2016. Top Journals are identified through ShanghaiRanking’s Academic Excellence Survey or by Journal Impact Factor.
- Total number of staff of winning a significant award in an Academic Subject since 1981.

The results show that Mechanical Engineering in PolyU continues to be regarded as one of the best in the world. PolyU Mechanical Engineering will continue to strive for the excellence in our academic and research missions.

Prof. Fu Mingwang secured research funding from the NSFC key project

Prof. Fu Mingwang, Professor, Department of Mechanical Engineering, in collaboration with Prof. Shi San Qiang, Chair Professor and Head of Department of Mechanical Engineering, has been awarded a RMB\$3 million worth, five-year grant (2019.01-2023.12) for a research project “Research on the theories and technological fundamentals in integrated plastic forming of shape and tailoring of property of cross-scale structures” (跨尺度構件形性協同塑性成形理論及技術基礎研究). The project is a key project funded by the National Natural Science Foundation of China (國家自然科學基金會, NSFC).

Metal Forming is one of the most important manufacturing processes widely used in many industrial clusters, especially in auto and aerospace industries. Currently, this process has been extensively used in making meso- and micro-scaled parts or macro-scaled structures but with miniaturized features in tandem with product miniaturization in many industrial clusters. Product miniaturization is an overwhelming trend due to the escalating concern about environment impact, energy consumption and materials usage and thus multi-scale manufacturing including meso- and micro-scale is getting crucial. On the other hand, many cross-scale parts and components with macro-scale dimensions and plenty of meso- and micro-scaled geometry features, such as metallic bipolar plates (BPPs) for fuel cell, have been widely used in different industrial scenarios. The cross-scale manufacturing is also becoming critical. Therefore, multi-scale and cross-scale manufacturing is an efficient manufacturing solution for product miniaturization. In multi- and cross-scale manufacturing, there are some unique and eluded phenomena involved, which must be physically understood and scientifically articulated for innovative and synergic shape forming and property tailoring of the deformed parts in different scales.

Prof. Fu and his research team aimed to develop a forming technology for synergic forming of shape and geometry, and the simultaneous tailoring of the quality and property of the deformed parts in multi-scales. By using three typical parts with multi- and cross-scales as case studies, the above developed theories for dealing size effect and its affected phenomena will be validated and verified. These theories will be deployed to the study and development of the needed technologies to make three case study parts with focusing on synergic and precision forming of shape and accurate tailoring of their quality and property, and further addressing the bottleneck issues arising in making these parts.

Success in securing GRF/ECS 2019/20

In the 2019/2020 results of grants from the Research Grants Council’s General Research Fund (GRF) and Early Career Scheme (ECS) announced in June 2019, five of our GRF proposals and one ECS were funded.

Principal Investigator	Project Title
Prof. CHEN Guohua	Conformal coating of elastomeric conducting polymer with ionic conductivity on Ni-rich layered cathodes for enhanced redox cycle stability of lithium-ion batteries
Dr RUAN Haihui	Towards low-cost thermal imaging based on chalcogenide glasses: exploiting nonlinear viscoelasticity in precision lens molding
Prof. SU Zhongqing	In-situ 3-D Nonlinear Ultrasonic Imaging for Embedded Scatterers with 3-D Features Using Diffuse Waves: from Offline NDE to Continuous SHM
Prof. WEN Chih-yung	Numerical and Experimental Investigations of Thermochemical Nonequilibrium Phenomena in Hypersonic Flows
Dr ZHU Jie	Study of genetic algorithm-based inverse metamaterial design for acoustic wave manipulation in water
Dr JIAO Zengbao	Phase stability and deformation mechanisms of nanocrystalline fcc medium- and high-entropy alloys at low and intermediate temperatures

Prof. Teik Lim elected Fellow of the National Academy of Inventors

Our Departmental Academic Advisor Prof. Teik Lim from University of Texas at Arlington was elected the Fellow of the National Academy of Inventors (NAI) 2018. Prof. Lim is the founding director of the highly successful and enduring Hypoid and Bevel Gear Mesh and Dynamics Modeling Consortium, and UC Simulation Center.

Election to NAI Fellow status is the highest professional distinction accorded to academic inventors who have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society. The 2018 class of NAI Fellows has made an incredible impact in a variety of fields, including biomedical engineering, laser photonics and computer sciences.



Prof. Zhongqing Su appointed new Editor-in-Chief to prestigious Elsevier Journal

Prof. Zhongqing Su, Professor at the Department of Mechanical Engineering, has been appointed by Elsevier as the new Editor-in-Chief (EIC) of Ultrasonics. Prof. Su assumed office on 1st January 2019.

Published by Elsevier, Ultrasonics is a leading international journal dedicated to the science and technology of ultrasonics, covering all aspects of the field. In retrospect, Ultrasonics has been very well developed over half a century, being shaped into today’s excellent standard. As one of the principal titles in this field, this illustrious journal has secured its prestige, recognition, and reputation in the community, playing an indispensable and vital role in the development and dissemination of original research work in the allied fields of ultrasonics. Prof. Su has been working in the area of ultrasonic-wave-based structural health monitoring over the years, and his research group in PolyU has been dedicated to a wide array of research and development pertaining to ultrasonics, with both fundamental investigations and real-world engineering applications.



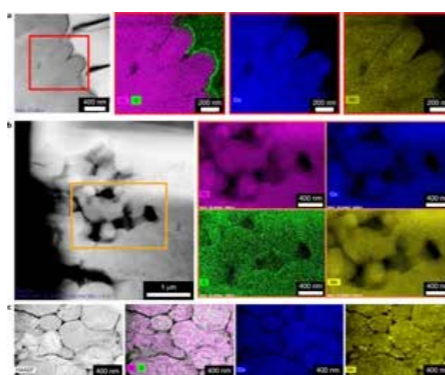
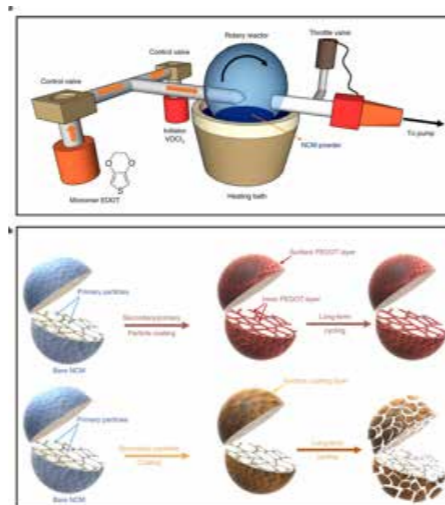
Prof. Chen Guohua's technological breakthrough in layered lithium published in high impact journal "Nature Energy"

A technological breakthrough in layered lithium transition metal oxide cathodes offers a promising design strategy for Ni-rich cathodes towards high-energy, long-life and safe lithium-ion batteries. This new study reported by Prof. Chen Guohua and his research team of the PolyU Department of Mechanical Engineering was published in the high impact international journal "Nature Energy".

Building ultraconformal protective layers on both secondary and primary particles of layered lithium transition metal oxide cathodes
Nature Energy volume 4, pages 484-494(2019)

Abstract

Despite their relatively high capacity, layered lithium transition metal oxides suffer from crystal and interfacial structural instability under aggressive electrochemical and thermal driving forces, leading to rapid performance degradation and severe safety concerns. Here we report a transformative approach using an oxidative chemical vapour deposition technique to build a protective conductive polymer (poly(3,4-ethylenedioxythiophene)) skin on layered oxide cathode materials. The ultraconformal poly(3,4-ethylenedioxythiophene) skin facilitates the transport of lithium ions and electrons, significantly suppresses the undesired layered to spinel/rock-salt phase transformation and the associated oxygen loss, mitigates intergranular and intragranular mechanical cracking, and effectively stabilizes the cathode-electrolyte interface. This approach remarkably enhances the capacity and thermal stability under high-voltage operation. Building a protective skin at both secondary and primary particle levels of layered oxides offers a promising design strategy for Ni-rich cathodes towards high-energy, long-life and safe lithium-ion batteries.



Prof. Wallace Leung Woon-Fong lauded with the IAAM Medal 2019 for contributions in advanced materials

IAAM Medal is a prestigious international award recognized by the International Association of Advanced Materials, Sweden, for notable and professional achievements, which fostered and enriched the development of Materials Science and Technology filed through outstanding research in Physical, Chemical, Biological, Engineering, Medical, Mathematical, Earth, Atmosphere, Ocean and Planetary Sciences. The medal is awarded based on contributions made through work done during the ten years preceding from the year of award. The selections for the IAAM awards are done by a duly constituted awards committee and the awards are given to the awardees at the assembly of Advanced Materials Congress.



Prof. Wallace Woon Fong Leung, Chair Professor of Innovative Products and Technologies, Department of Mechanical Engineering, PolyU, is the IAAM medal recipient in 2019. Prof. Leung has been honoured with the prestigious IAAM Medal for his notable and outstanding research contribution in the field of Graphene and 2D Materials in Energy and Environmental Applications in the 26th award ceremony of International Association of Advanced Materials held on 11th June 2019 at Conference Centre, M/S Mariella, Stockholm, Sweden. As the awardee/ laureate, Prof. Leung was invited to deliver an award lecture at the June 10-13th assembly of Advanced Materials Congress.

Prof. Wallace Leung Woon-Fong developed electrostatically charged nanofiber filter ideal for defense against pollutants and viruses

At a press conference on 27 March 2019, Ir. Prof. Wallace Leung Woon-Fong, Chair Professor of Innovative Products and Technologies of the Department of Mechanical Engineering, introduced a PolyU-developed electrostatically charged nanofiber filter with multiple separator layers. The novel PVDF nanofiber filter can capture pollutant particles that are below 100 nm in diameter. It demonstrates much better performance in breathability and filtration efficiency, compared with existing technologies and products, and has a longer shelf life up to 90 days.

Prof. Leung said the filter or face mask applying the innovation would be an ideal defense against virus, such as measles and SARS, during an outbreak. The novel technology also has great potential for applying in the analytical technique of Western Blot, and in effective release of protein-based drugs.



Prof. Wallace Leung Woon-Fong received HKIE Environmental Paper Award

Ir. Prof. Wallace Leung was awarded the 1st Runner Up of 2019 Environmental Paper Award. His paper "Clean Air with Novel Nanofiber Technologies" was acclaimed by the Chairman of the competition, Prof. Kaimin Shih of the University of Hong Kong, the paper submitted by Prof. Leung was of high quality, accumulating a wealth of research results and knowledge over time on improving air quality with various developed technologies.

A panel of eight judges from academia, government, consulting and industry was formed to assess the submissions in 2019. Selection criteria are based on innovation, environmental performance, contribution to sustainable development, comprehensiveness and coverage, logical arguments, presentation, and clarity. Prof. Leung's paper was summarized in a 15-page anonymous submission, which was highly rated by the judges.

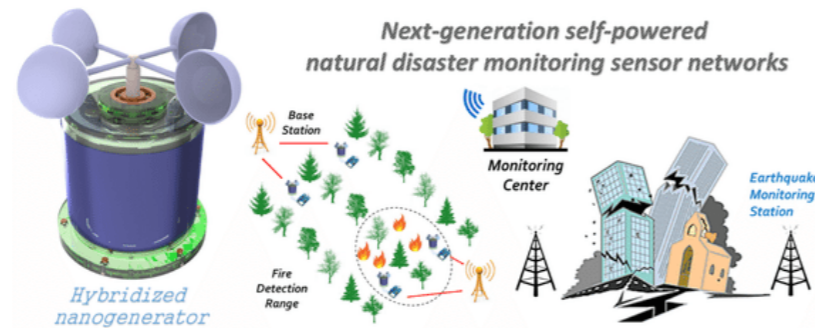
The Environmental Paper Award is a biennial paper competition organized by the Environmental Division of the Hong Kong Institution of Engineers (HKIE). The primary objective of the Award is to recognize engineers' efforts in any environmental research and projects in which environmental pollution control and sustainable development are fully considered and adequately addressed. This Award is intended to encourage the widespread emergence of environmentally sound projects.



Dr Xingjian Jing's research team advanced energy harvesting technology

A wind-driven hybrid triboelectric-electromagnetic nanogenerator was recently developed and tested by PolyU ME staff led by Dr Xingjian Jing. The work will be reported by Nano Energy, which is a high-impact and well-recognized journal in the area, with an impact factor 13.12 (2017 Journal Citation Report; Rank 7/146 in Applied Physics, 15/285 in Materials Sciences Multidisciplinary, 7/92 in Nanoscience & Nanotechnology).

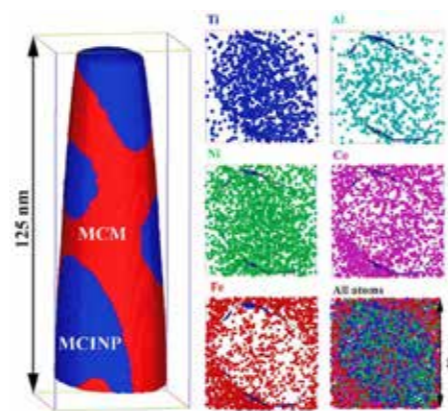
The frequent occurrence of natural disasters is a major threat to the property and casualties of human beings in recent decades. Disaster prone points can be very closely monitored by augmenting the distribution of wireless sensor networks. However, regularly replacing the battery of electronics remains a significant challenge especially in a remote area. To this aim, a wind-driven hybridized energy harvester is invented, which can harvest rotation energy and can be integrated with WSN technology to construct a self-powered natural disaster monitoring system. In this novel harvester, the rotator is directly driven by external rotational motion thus can easily hybridize the TENG with eighteen EMGs. Consequently, the fully packaged WH-EH device combining with the water-proof flexible solar cell can be completely isolated from the harsh wilderness environment. The output feature of TENG of high voltage but low current that perfectly compensate for the differing performance of EMG to achieve an excellent output power of the hybrid device with a broad frequency range. Moreover, the WH-EH is capable of lighting hundreds of LEDs and powering small electronics. The quick-acting charging ability of a capacitor by the WH-EH was conducted effectively in experimental tests. Three self-powered sensor systems enabled by a single WH-EH are systematically investigated and demonstrated, including a temperature sensor for forest fire detection, vibration sensor for earthquake monitoring and a wireless transceiver for alarm information spreading. Obviously, the invention of the hybridized generator will be of great importance to promote the development of self-powered wireless sensor networks and provide a sustainable power-supply solution to long-term natural disaster monitoring stations in residential or remote areas.



Dr Zengbao Jiao co-authored a paper in Science on high-entropy alloys

Advanced structural materials with gigapascal strength and high ductility are highly desirable for a wide range of engineering applications, such as aerospace, automotive, marine, and constructions. However, most metallurgical mechanisms for increasing material strength lead to a loss of ductility.

A new study about multicomponent-nanoparticle-strengthened high-entropy alloys, co-authored by Dr. Zengbao Jiao, assistant professor of Department of Mechanical Engineering, was recently published in Science. In collaboration with Prof. C.T. Liu from CityU and other colleagues from BUT, IMR, and CSU, the researchers designed new Fe-Co-Ni-Al-Ti high-entropy alloys, which exhibit superb mechanical properties with 1.5 GPa tensile strength and 50% uniform elongation. Atom probe tomography (APT) reveals that the nanoparticles have multicomponent compositions, and the key of alloy development is getting the composition tuned correctly, such that the nanoparticles can fully exert the strengthening effect and also help to maintain high work-hardening ability and plastic deformation stability. This multicomponent-nanoparticle-strengthening strategy offers a new paradigm to develop next-generation materials for structural applications.



Dr Liang An's novel fuel cell system design featured in International Journal of Energy Research

Fuel cells have received worldwide research interest as a promising energy conversion technology in the last decades, primarily due to their simple system design, high conversion efficiency, low carbon dioxide emissions as well as quick fuel refueling. Currently, hydrogen fuel cells are widely studied and preliminarily commercialized. However, realizing the widespread application of hydrogen fuel cells requires addressing the production, transportation, and storage of hydrogen.

A new study about a novel fuel cell system design using ethylene glycol as fuel and hydrogen peroxide as oxidant, reported by Mr Zhefei Pan, a PhD student of Department of Mechanical Engineering, and Dr Liang An, an Assistant Professor of Department of Mechanical Engineering, was recently published in International Journal of Energy Research and selected to be featured as the front cover. Theoretically, this fuel cell exhibits a theoretical voltage as high as 2.47 V, while it is experimentally demonstrated that the hybrid fuel cell delivers an open-circuit voltage of 1.41 V at 60°C. More impressively, this fuel cell yields a peak power density of 80.9 mW cm⁻², boosting the peak power density by 20.8% as compared to the fuel cell using oxygen (67 mW cm⁻²). This novel design is a promising application for situations where oxygen is not sufficient, such as underwater and outer space.

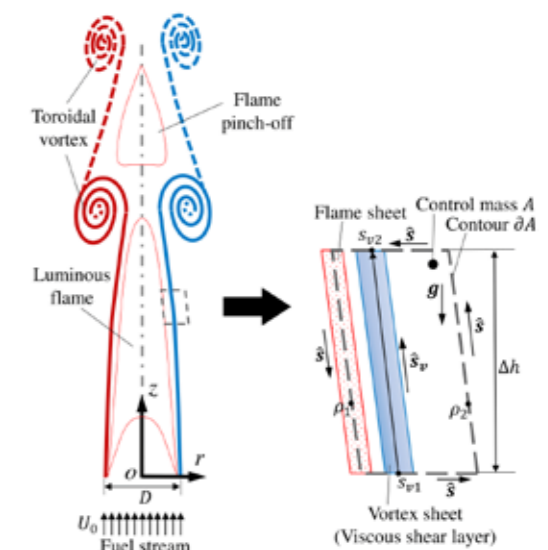
Z.F. Pan, B. Huang, L. An, Performance of a hybrid direct ethylene glycol fuel cell, *International Journal of Energy Research* 43 (2019) 2583-2591.



Dr Peng Zhang's research team unveiled the secret of the flicking of diffusion flames

Diffusion flames are ubiquitous in domestic and industrial applications that have been shaping human civilization. The development of flame instabilities could impair combustion performance, cause ignition failure or flame extinction, damage combustion devices, and trigger uncontrollable fire hazard. A prominent phenomenon related to the stability of a buoyant diffusion flame is flame flickering, or puffing, which describes the vibratory motion of the luminous flame. Previous experimental investigations have confirmed a famous scaling relation between the flickering frequency and the diameter of the fuel inlet. However, the fundamental mechanism for this relation has not been clearly understood.

To unveil the secret of the flickering of buoyant diffusion flames, Dr. Xi Xia, research fellow, and Dr. Peng Zhang, associate professor of Department of Mechanical Engineering, proposed a vortex-dynamical theory that connects the periodicity of flame flickering to the periodic formation and detachment of the toroidal vortices, that result from the buoyancy-induced shearing at the flame sheet (as illustrated in the figure). By incorporating the theory on vortex pinch-off, this work successfully establishes a theoretical scaling theory for the flickering frequency, which has been validated by the existing experimental data of pool flames and jet diffusion flames. This work has been included in the latest issue of the Journal of Fluid Mechanics. [X. Xia and P. Zhang, *J. Fluid Mech.* (2018), vol. 855, pp. 1156-1169]



Student Accomplishments

ME Student Team won the Gold Award of ASM Technology Award 2019

Terrific! The PolyU ME student team won the Gold Award of ASM Technology Award 2019. The team members, CHOW Hung Ming Roy, SHIN Ji Ho and SOMESHWAR Rudra Ajay, supervised by Dr Henry Chu and Dr Curtis Ng, competed with HKU, HKUST, CUHK and City U. The PolyU ME team project “ASME Competition Robot Development & Vision Based Target Alignment” stood out from the rest, triumphed in the competition.

For the sake of promoting technological innovation in Hong Kong, ASM Technology Award proposes to be fertile soil for the growth of potential engineers. Each year, five established local institutions, including The Chinese University of Hong Kong, The City University of Hong Kong, The Hong Kong Polytechnic University, The Hong Kong University of Science and Technology, and The University of Hong Kong are invited to join the Competition by nominating two outstanding Final Year Projects (FYP) of their undergraduate students with engineering or related background.

This year, 10 nominated FYP teams have made their impressive and fabulous presentations in the finale on 28 June 2019. After a day-long intense competition, the PolyU ME team won the championship.

The project and presentation were judged by technical performance and project quality, creativity, quality & originality, applicability and practicability application of technology, clear communication of key areas, approaches & arguments, clarity and organization of presentation. The panel of judges consisted of senior professionals and experts from ASM, invited academic staff from universities and also industry practitioners.

We are very proud of the outstanding performance by the PolyU ME student team. The team was awarded HK\$50,000 as scholarship. And the PolyU Faculty of Engineering, as the institution of the Champion, received a donation of HKD100,000 as an encouragement to the outstanding students of the Faculty.



ME Student Team won the 2nd Runner-up in ASME E-Fest Asia Pacific Student Design Competition 2019

A team of Mechanical Engineering (ME) students won the 2nd Runner-up in the 2019 American Society of Mechanical Engineers (ASME) Student Design Competition, E-Fest Asia Pacific Region, held at Velore, India. The winning team, along with winners from different regions, now advance and will compete for the Championship at the E-Fest Global.

The team, comprised of year three final-year undergraduate students, Ji-ho SHIN, Hung Ming Roy CHOW and Rudra SOMESHWAR, under the supervision of Dr Henry CHU and Ir Dr Curtis NG of the Department of Mechanical Engineering, designed a wheeled mobile robot, which can pick up as many balls as possible in the field.

With great support from the department and Industrial Centre (IC), the robot design is capable of grasping balls, ranging from ping pong ball to basketball, in the field rapidly without knocking the balls off the tube stands. Students feel excited with their achievement and they are looking forward to improving their robot design for the final competition.



ME Graduates won Bronze Award in HKEIA Innovation and Technology Project Competition

A group of ME graduates won the Bronze Award in the HKEIA (The Hong Kong Electronic Industries Association) Innovation and Technology Project Competition 2018. The award ceremony took place at the HKEIA Annual Dinner on 15 Oct 2018.

The Hong Kong Electronic Industries Association has been running the competition annually with an objective to recognize and reward students with outstanding projects which demonstrate excellence in technology and innovation. Final year students studying in engineering fields from universities and tertiary institutions in Hong Kong are invited to participate in the competition with their final year projects. Judging criteria include creativity, applicability and practicability, and application of technology. The panel of judges consists of senior professionals and experts from the industry.

PolyU ME final year students, KONG Miu Shan, WONG Yat Yuen and TSE Hung Kwan, teamed up for the final year project named “Design, Assemble and Test the Electric Power Supply System for Formula Student Car”, under the supervision of Dr Henry CHU and Ir Elsa TANG. The project aimed at designing and promoting a newly developed powertrain system to the market. Their sophisticated supply system and formula car project won praise from the panel of judges and obtained the Bronze Award with a cash prize of HK\$10,000.



ME Student Team won in the ASME Student Design Competition Finals 2018

Team of BEng in Mechanical Engineering (ME) students won the 1st Runner-up in The 2018 American Society of Mechanical Engineers (ASME) Student Design Competition (SDC) held on 11 November 2018, in Pittsburgh, Pennsylvania, USA. The ASME SDC Finals, sponsored by Boeing every year, is a well-known international student design competition of its kind. "Robot Football: Gooooaaallllllll!" is the theme for this year. Of the 16 teams, they are the top tiers from 4 Districts ASME SDC representing 6 different countries. Teams competed each other in a modified, four-way football games. 4 Asian teams, 3 South America and 9 North America kicked each other out for the Championship Title.



Our team, comprised of year four undergraduate students, Stanley GO, LAM Kah Cheng and CHEUNG Lap Wing, under the supervision of Ir Dr Curtis Ng of ME, designed and created a 3 battery-powered robots with strategic mind which could effectively shoot balls right to the competitors' gates and strongly defense its own gate, this ended up in scoring high marks to win the competition.



"Our students were wholly dedicated to this challenge. They were highly self-motivated to work on the prototypes and well prepared for the competition. With great support from Prof. SQ Shi (Head of Department of ME, PolyU), ME technical team, International Affair Office (IAO), Industrial Centre (IC) and ASME-HK Section, our robots could manage to compete with other strong competitors in Final 16, then Final 8, through Final 4 and made its way to 1st Runner-up. Students feel excited with their achievement and we are highly proud of them." Ir Dr Curtis Ng said.

The competition, including finalists from regional events held during the course of 2018, was held in conjunction with the ASME's 2018 International Mechanical Engineering Congress and Exposition (IMECE) in Pittsburgh, Pennsylvania, USA.

ME student won the prestigious Sir James Lighthill Award

At the Twenty-fifth International Congress on Sound and Vibration (ICSV25) held at Hiroshima in Japan, Mr. ZHANG Xiaoqi, a year two Ph.D. student in ME, won the prestigious Sir James Lighthill Award in the best student paper competition. The Award is for the best paper published in the Proceedings of ICSV by a person in the early stages of his/her career. The author of the paper must either be a student or within the first five years of full-time employment.

As one of the biggest sound and vibration control events, ICSV was organized by the International Institute of Acoustics and Vibration (IIAV) and was attended this year by over 820 participants from over 30 different countries. Xiaoqi's paper is entitled "Numerical Studies of the Acoustic Impedance of Micro-perforated Panels under Grazing Flow" and co-authored with his supervisor Prof. L. Cheng. The paper was chosen out of a total of 200 eligible papers presented during the congress by a panel composed of the IIAV board of directors.



ME student won the 2nd Place in the 2018 Asia Pacific Mechanics Contest for College Students

Mr XU Tianlu, a year-2 student studying in ME, won the Second Place at the 2018 Asia Pacific Mechanics Contest for College Students organized by the Society of Theoretical and Applied Mechanics of the Republic of China and held at the National Cheng Kung University during 14-16 August 2018.



This year, the competition task was to design a lightweight beam with excellent mechanical performance and produce it using 3D printing. About 39 students from 11 universities in Hong Kong, Taiwan and Singapore participated the final competition. The winners were selected based on criteria including design innovation, design methodology, 3D printing technology, presentation skills, as well as the mechanical performance of the beam exhibited during the test.

"This was the first time that our PolyU ME sent a team to this contest. I am so pleased and proud that Tianlu won the Second Place Award. I have confidence that we will perform even better in the next year's contest," Dr Haimin YAO said, who is the team coach and programme leader of ME programme.

HKPolyU Racing HKF-02e Rollout

Pioneered by a group of ME students, the HKPolyU Racing Team is devoted to participating in the Formula Student China competition (FAES China) annually – a competition that involves design, engineering, manufacturing, testing, and races.



HKPolyU Racing is the first ever team representing Hong Kong to take part in the Formula SAE, which is described as the largest collegiate engineering design contest for undergraduate and graduate students from different parts of the world, such as Germany, Australia, UK, Italy, etc. The contest aims to enhance students' engineering design and project management skills by applying learned theories in a challenging competition.

An rollout ceremony of the racing car HKF-02e was held on 15 Oct 2018. It marked the embarkation of the competition 2018. In the ceremony, around 120 participants including PolyU senior management, Education Bureau, professionals and senior executives from the mechanical engineering field and industrial sponsors joined together to encourage young students to pursue their dreams with persistence.



ME PhD student won Excellent Oral Award in CEEGE 2019

GUO Zhenbin, PhD student of the Department, got the Excellent Oral Award in the 2nd International Conference on Electrical Engineering and Green Energy (CEEGE 2019) in Roma, Italy from June 28-30, 2019.

This conference was a premier forum for electrical engineering and green energy researchers and professionals getting together to help our globe to be sustainable, green-living, more human through their insights and innovations. The forum focused on providing an opportunity to technologists, scientists, industrialists, environmentalists and experts to showcase their novel energy efficient technologies. The goal of the conference was to address energy and environment related challenges, especially those facing the developing world by providing networking opportunities for global collaborations for developing suitable solutions for diverse applications and user groups.

Outstanding world leaders as faculty presented their research on modern technologies, providing solutions for sustainable development. Participants were from across the globe, including the oil producing countries Iran, Saudi Arabia, and the vital oil-consuming developed and developing countries. GUO Zhenbin presented a paper "Improving Electrochemical Performance of Si-based Electrode via Gradient Si Concentration", stood out amongst the participants. His presentation was selected as the best one at the conference.

Zhenbin joined the Department in July 2016 as a PhD student in PolyU, under the supervision of Dr Yao Haimin. His research interest includes the performance optimization of lithium-ion batteries. Currently, he is a Research Assistant of the department, developing high-performance lithium-ion batteries with functional gradient designs.



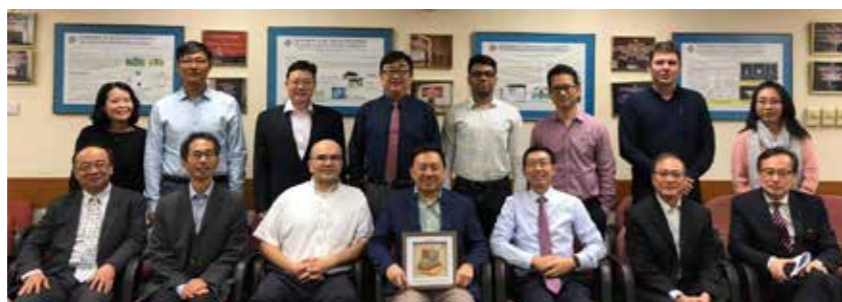
Department and Scholarly Activities

106th Departmental Advisory Committee Meeting

The 106th Departmental Advisory Committee (DAC) meeting took place on 21 March 2019, under the chairmanship of Ir Conrad Wong, Vice Chairman of Yau Lee Group. We were grateful to have new committee members joining us. They were Prof. Li Bing (Acting Dean of School of Mechanical Engineering and Automation Harbin Institute of Technology, Shenzhen), Mr Richard CW Chan (Assistant Director, Engineering Services Branch 3, Electrical & Mechanical Services Department, HKSAR), Dr Lawrence CC Cheung (Director, Technology Development Hong Kong Productivity Council), Mr Banting WP Sze (Chairman and Chief Executive Officer, Freetech Road Recycling Technology (Holdings) Limited) as well as two student representatives, Mr Farhan Khalid (full-time BEng student) and Mr Andre Eccel Vellwock (full-time PhD student).

It was a very useful meeting as members, with their wide range of expertise, had a fruitful discussion, sharing their expectations on our students and graduates, and provided very constructive views and suggestions to the Department of its efforts in the future development in teaching and learning, research and consultancy and strategic development.

We in particular thank Ir Wong for his leadership and contribution to our Department as our DAC Chairman for 6 years since 27 March 2013. Ir Dr Angus HW Cheung (Chief Executive Officer, China Aircraft Services Limited) will be the next DAC Chairman starting on 27 March 2019.



Department and Scholarly Activities

ME hosted the 8th East Asia Mechanical and Aerospace Engineering Workshop

Organized and hosted by ME Department, the 8th East Asia Mechanical and Aerospace Engineering Workshop (EAMAEW-2018) was very successfully held in PolyU, 1-3 December 2018.

EAMAEW-2018 was the eighth one in this annual workshop series. Four top-notch universities in the East Asia region, i.e., Hokkaido University, Korea University, National Cheng Kung University and Hong Kong Polytechnic University, are the main participating universities. This workshop series has created a platform not only for academics from these four universities to exchange ideas and views in the broad area of mechanical and aerospace engineering, but also for research students to mingle together and exchange their learning and research experiences. EAMAEW-2018 has extended the success that has been well maintained by previous workshops in Seoul (2011 & 2015), Tainan (2012 & 2016), Sapporo (2013 & 2017) and Hong Kong (2014).

Approximately 100 participants participated in EAMAEW-2018, delivering about 70 oral presentations in 9 structured sessions covering three broad fields, i.e., materials & solid mechanics, thermofluids & combustion, as well as control, acoustics & dynamics. In addition, two senior/junior professors from each of the four universities were invited to deliver keynote lectures. Meanwhile, discussions were made among the participating departments on continuing the facilitating of student exchange programs. All these have made EAMAEW-2018 one of the events in this series history, with the largest number of submissions and the most attendees.

EAMAEW-2018 was also highlighted with elaborately designed social activities reflecting the unique culture of Hong Kong. These activities include Cantonese-style Banquet Dinner, Excursion Trip and some others in which participants mingled together and had a lot of fun.

The Organizing Committee, chaired by ME Head Prof. San-Qiang Shi, consisted of 8 staff and 13 research students who had fully committed themselves to preparation of this event. It was the aspirations, hard work, and devoted efforts from this group of staff and students that have made EAMAEW-2018 another successful event in this workshop series.



ME hosted the 7th Asia-Pacific Workshop on Structural Health Monitoring

Organized and hosted by ME Department, the 7th Asia-Pacific Workshop on Structural Health Monitoring (APWSHM-2018) was very successfully held in Harbour Grand Kowloon, Hong Kong, 12-15 November 2018! Prof. Zhongqing Su, from ME Department, had the honour to serve as the General Chair to APWSHM-2018.

Along with its two sister series of workshops (the International Workshop on Structural Health Monitoring (IWSHM) and the European Workshop on Structural Health Monitoring (EWSHM)), APWSHM-2018 was the seventh version in the series of this biennial event, having reviewed the latest research developments and real-world applications of SHM techniques. It has created a platform for networking scholars and colleagues in the area of SHM research, bridging academic endeavours and industrial needs, and inspiring new research and collaborative ideas. APWSHM-2018 has extended the success that has been well maintained by previous workshops in Yokohama (2006), Melbourne (2008 & 2012), Tokyo (2010), Shenzhen (2014) and Hobart (2016).

Approximately 260 participants from more than 30 countries and regions around the world participated in APWSHM-2018, delivering ~200 oral presentations in 42 structured sessions including 7 special sessions with specific emphases varying from conventional topics such as guided-wave-based damage detection and optical fibres, through appealing industrial application paradigms, to emerging artificial-intelligence-assisted SHM and nanocomposites-inspired sensors. This has made APWSHM-2018 one of the events in this series history, with the largest volume of submissions and the most attendees. This, to some extent, reflects the prosperity, intensive research and development of SHM today.

In particular, seven internationally renowned scholars, globally distributed, were invited to deliver plenary talks, and they are Prof. Massimo Ruzzene (Georgia Institute of Technology, the USA), Prof. Qiu-Sheng Li (The City University of Hong Kong, HKSAR), Prof. Hyung-Jo Jung (Korea Advanced Institute of Science and Technology, South Korea), Prof. Chun-Hui Wang (University of New South Wales, Australia), Prof. Hideaki Murayama (The University of Tokyo, Japan), Prof. Michael Lowe (Imperial College London, the UK), and Prof. Shan-tung Tu (East China University of Science & Technology, China).

Among the ~200 abstracts that were accepted after a rigorous peer-review process, 133 were extended to full-length papers and included in the APWSHM-2018 Proceedings published by NDT.net (ISBN: 978-3-00-060359-4).

To honour high-quality, original research work submitted to the workshop, APWSHM-2018 proudly set up two awards: Best Paper Award (sponsored by Structural Health Monitoring: An International Journal) and Best Student Presentation Award (sponsored by SAGE). Two ad-hoc Panels were formed, respectively led by APWSHM-2018 co-chairs Prof. Shenfang Yuan (Nanjing University of Aeronautics and Astronautics, China) and Prof. Hoon Sohn (Korea Advanced Institute of Science and Technology, South Korea), to select a paper having the highest quality and innovation, and up to two students making the best oral presentation among all student participants. With a rigorous selection procedure, the paper titled "Hole-edge damage monitoring of bolted composite joints with a flexible eddy current sensing film" (by Liu et al, Xiamen University, China) won the Best Paper Award, and Mr. S. Wakabayashi (Okayama University, Japan) and Mr. Dhuttia, T.H. (Brunel University London, the UK) received the Best Student Presentation Award.

It is also worthy of mentioning that APWSHM-2018 was highlighted with elaborately designed social activities reflecting the unique culture of Hong Kong. These activities included Cocktail Reception Night, Dinner Cruise and Gala Dinner and some others in which participants mingled together and had a lot of fun.



PolyU hosted the first-of-its-kind international Marine Robotics Forum in HK

The Hong Kong Polytechnic University (PolyU) organized "The 1st International Forum on Marine Robotics" on 3 April 2019 for international and local experts to share insights on how to advance marine robotic technology and its applications in Hong Kong and the Greater Bay Area (GBA). This is one of the major events initiated by PolyU to foster closer collaborations and explore innovative technologies with top-notch universities and institutes around the world through forming strategic research and development alliances.

Experts speaking at the Forum included Dr. Ravi VAIDYANATHAN, Senior Lecturer in Bio-Mechatronics, Director of International Collaboration, Imperial Robotics Forum, Imperial College London, UK; Dr Ahmed CHEMORI, Senior Scientist in LIRMM-CNRS University of Montpellier, France; Professor Shuo LI, Deputy Director of Shenyang Institute of Automation, Chinese Academy of Sciences; and Professor David M LANE, Professor of Autonomous Systems Engineering, Director of Edinburgh Centre for Robotics, Heriot-Watt University, The University of Edinburgh.

They shared themes that covered bio-mechatronic sensory motor control, autonomous underwater vehicles, marine robotics for deep-sea exploration and operation. The professionals exchanged valuable views and experiences on marine robotics technologies.

Dr Xing-jian JING, Associate Professor of PolyU's Department of Mechanical Engineering and a seasoned researcher on bio-inspired dynamics, control and robotics, highlighted that, "Technologies related to underwater exploration and manipulation as well as new bio-inspired underwater robots would be two important areas to be explored in marine robotics. These key marine robotic technologies are important to ocean exploration and exploitation. They also contribute enormously in environmental and pollution study, critical underwater infrastructure inspection, natural resource exploration, and sensing and mapping of ocean for specific tasks and missions".



5th ME Research Presentation Competition 2019

The 5th PolyU Mechanical Engineering Research Presentation Competition was successfully held at the Lecture Theatre in the Jockey Club Innovation Tower, PolyU, on 28 May 2019. It is an annual event for research students to display their research project results and share knowledge with the PolyU community.

This year, we emphasized on academic pitching skills, with an aim to train research students to explain academic ideas to peers and non-experts clearly. Twenty-four research student participants each delivered a high-impact brief in a 3-minute presentation. With their professional and animated presentations, those Fouling Species, Bidimensional Talbot Self-imaging, Linear Deformable Objects, Acoustically Actuated Artificial Micro-swimmer were no longer distant to the layman.

After the oral presentations, participants interacted with the audience in the research posters exhibition. Displayed posters not only highlighted their research project results, but it was also an occasion for participants to convey their ideas, communicate with viewers and professionals, and let their talents be known.

Congratulations to their fabulous presentations and excellent research work!



Champion

Student: Miss LIN Dongmei

Supervisor: Prof. Zhou Limin

Title: Rate-Independent and Ultrastable Low-Temperature Sodium Storage in Dual-Phase TiO₂ Nanowires

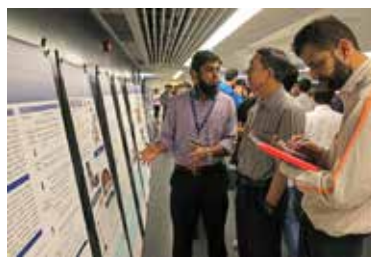


1st Runner-Up

Student: Miss GAO He

Supervisor: Dr Zhu Jie

Title: Bidimensional Talbot Self-imaging With Coding Metamaterials

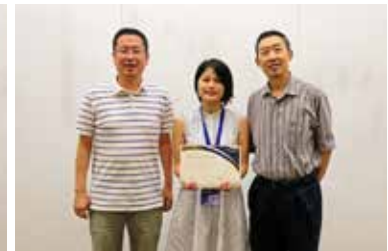


2nd Runner-Up

Student: Mr FAN E

Supervisor: Prof. Wen Chih-Yung

Title: Effects of Combustion on Shock Bubble Interaction



Merit

Student: Miss MA Wanyu

Supervisor: Dr David Navarro-Alarcon

Title: Shape Control of Linear Deformable Objects Based on RGB-D Sensing and Model Estimation

Merit

Student: Miss WANG Jingwei

Supervisor: Prof. Chen Guohua

Title: Flexible Supercapacitor With a Na-ion Conducting Gel Polymer Membrane as Electrolyte and Separator

Merit

Student: Miss ZHOU Bingchen

Supervisor: Dr Jiao Zengbao

Title: Design of Advanced High-Strength Steels Strengthened by Nanoscale Co-precipitates