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NAMI Symposium New Materials & Designs for MiC Innovation in Hong Kong 2021.12.16

On 16 December 2021, Nano and Advanced Materials Institute Limited (NAMI) co-organized a Symposium on "New Materials & Design for MiC Innovation in Hong Kong" with Hong Kong Trade Development Council at the Charles K. Kao Auditorium of the Hong Kong Science Park in Shatin. The Symposium focuses on new construction materials and technology which drive innovative design and construction of MiC, and a number of leading construction professionals are also invited to share their experiences. Prof. Chung was invited to make a plenary presentation on MiC construction using high strength S460 steel, and Ir Dennis Wan, Principal Assistant Secretary of Development Bureau, Government of HKSAR, was invited as the Guest of Honour to officiate the Seminar. There were over 200 participants who attended the event both on site and online.



A group photo of all speakers including Prof. Chung, Ir Dennis Wan, Ir Ivan Sham, and Ir Prof. Joseph Mak.



Ir Dennis Wan officiated the Symposium.



Prof. K. F. Chung presented on "Key issues on design and construction of MiC buildings for enhanced productivity".



Panel discussion of the Symposium.

New Materials & Design for MiC Innovation in Hong Kong - NAMI 2021.12.16

PROGRAM RUNDOWN

13:30 - 14:00	Registration
14:00 – 14:15	Welcome Speech Dr. Ivan SHAM Director of Research & Development (Construction) NAMI Opening Remarks Mr. Dennis WAN Principal Assistant Secretary Development Bureau, HKSAR
14:15 – 14:35	Innovative Concrete MiC Wall Connection System Mr. Stephen LEE Chairman Chun Wo Construction Holdings Co., Ltd.
14:35 – 14:55	Key Issues on Design & Construction of MiC Buildings for Enhanced Productivity Prof. Kwok Fai CHUNG Professor, Department of Civil and Environmental Engineering, PolyU Founding Director, Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch)
14:55 – 15:15	Structural Integrity and First-in-HK Experimental Testing on Full-scale Lightweight Steel-Concrete MiC Dr. Yanmin WU Technical Manager NAMI
15:15 - 15:30	Break
15:30 – 15:50	Development of Lightweight Concrete for Lightweight Steel-Concrete MiC Dr. Honggang ZHU Technical Manager NAMI
15:50 – 16:10	The Challenges of Practicing Steel-Concrete Hybrid MiC in Hong Kong Mr. John CHOW Technical Director, CPC Construction Hong Kong Assistant General Manager, Chevalier Construction Company Ltd.
16:10 – 16:30	 Panel Discussion: How to Promote New Low-carbon Materials in Hong Kong Moderator Ir. Thomas TONG, General Manager (Innovation), Construction Industry Council Panelists Mr. Stephen LEE, Chun Wo Construction Holdings Co., Ltd. Prof. Kwok Fai CHUNG, PolyU Mr. John CHOW, Chevalier Construction Company Ltd. Prof. Joseph MAK, HKIE Materials Division Dr. Ivan SHAM, NAMI

In collaboration with CNERC, the Nano and Advanced Materials Institute Ltd. was granted a 2year project entitled "*Hong Kong Modular Integrated Construction Innovations*" in July 2019 by the Innovation and Technology Fund under the Innovation and Technology Commission of the Government of Hong Kong SAR. The total project sum was HK\$26M including an industrial funding at HK\$8M contributed by four industrial partners.

The 2-year project aims to develop innovative MiC hybrid structural systems using high performance concrete and steel. With advanced material development and innovation applications of high strength light weight concrete, specific physical and mechanical properties of these high performance concrete are developed according to prevailing architectural, structural and durability requirements. Through structural engineering design development, innovative MiC building systems and modules with high strength S460 cold-formed steel with specific construction methods and details are formulated for low to medium rise buildings.

The research work undertaken at PolyU is led by Dr. T.M. Chan with support from Mr. H. Jiang and Dr. Y.F. Hu, and a comprehensive design development for effective use of S460 cold-formed rectangular hollow sections (CFRHS) in MiC is successfully completed. Key areas of investigation are:

- Mechanical properties of both flat elements and round corners of CFRHS
- Residual stress distributions within the CFRHS
- Axial compression behaviour of stocky and slender columns of CFRHS
- Beam behaviour of CFRHS
- Tension deformation of CFRHS joints
- Deformation behaviour of CFRHS frames under lateral loads