

## Department of Applied Physics



## Prof. YU Siu Fung

Professor

Phone Number	(852) 2766 5647
Email	apsfyu@polyu.edu.hk
Education	Ph.D. Cambridge University B.Eng. University College London
Research Interests	Design, Analysis and Fabrication of Bulk and Nanomaterials for Optics and Optoelectronics Applications
ORCID	0000-0003-0354-3767
Publication	246
H-index	41
Sum of the Times Cited	6432

### Awards and Honours (selected)

- Nanyang Award for Research and Innovation (NTU, Singapore), **2006**
- Senior Member IEEE, **2003**
- Hong Kong Croucher Foundation Scholarship, **1993**

### Patents (selected)

- W.F. Zhang and **S.F. Yu**, '關於白光激光器', PRC patent application IP-753A CP1211384GWG-HK
- K. Pita, Rajni, S.C. Tjin, C.H. Kam, **S.F. Yu**, 'Method of fabricating high refractive change in inorganic materials', **2007** (US20070253668 A1)
- K. Pita, Rajni, S.C. Tjin, C.H. Kam, **S.F. Yu**, 'Method of producing germanosilicate with a high refractive index change', **2006** (WO 2006062486 A1)

### Book

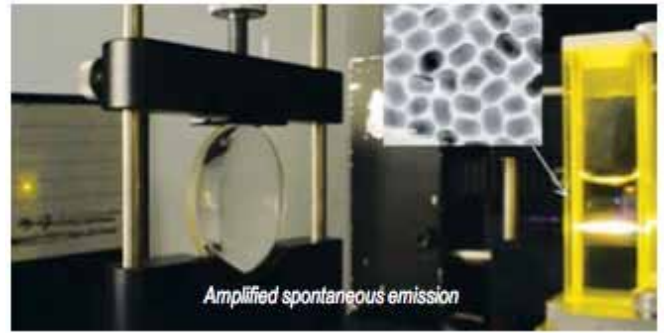
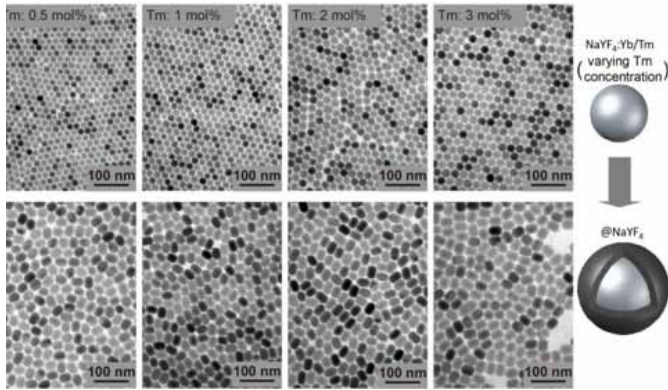
- S.F. Yu**, 'Design and Analysis of Vertical Cavity Surface Emitting Lasers', Wiley Series in Lasers and Applications, Wiley & Son, Inc, NY, **2003**. (ISBN 0-471- 39124-7)

### Publications (selected)

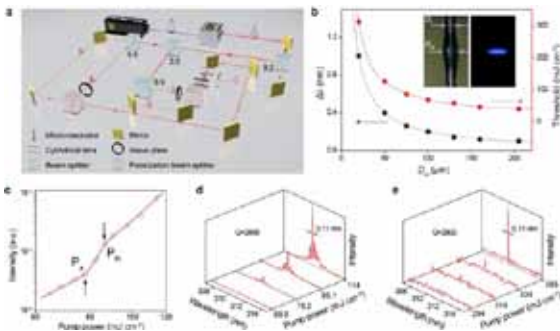
- L.M. Jin, X. Chen, C.K. Siu, F. Wang, **S.F. Yu**, Enhancing Multiphoton Upconversion from  $\text{NaYF}_4:\text{Yb/Tm}@\text{NaYF}_4$  Core-Shell Nanoparticles via the Use of Laser Cavity, *ACS Nano*, **2017**, (DOI: 10.1021/acsnano.6b07322).
- X.H. Xu, W.F. Zhang, D.C. Yang, W Lu, J.B. Qiu, **S.F. Yu**, Phonon-Assisted Population Inversion in Lanthanide-Doped d Upconversion  $\text{Ba}_2\text{LaF}_7$  Nanocrystals in Glass-Ceramics, *Adv. Mater.*, **2016**, (DOI: 10.1002/adma.201601405).
- X. Chen, L.M. Jin, W. Kong, T.Y. Sun, W.F. Zhang, X.H. Liu, J. Fan, **S.F. Yu**, F. Wang, Confining energy migration in upconversion nanoparticles towards deep ultraviolet lasing, *Nat. Commun.*, 4:2220, **2016** (DOI: 10.1038/ncomms3220).
- H. Zhu, X. Chen, L.M. Jin, Q.J. Wang, F. Wang, and **S.F. Yu**, 'Amplified Spontaneous Emission and Lasing from Lanthanide-Doped Up-Conversion Nanocrystals', *ACS Nano*, **2013** (DOI: 10.1021/nn405387t).
- H.L. Wen, H. Zhu, X. Chen, T.F. Hung, B.L. Wang, G.Y. Zhu, **S.F. Yu**, F. Wang, 'Upconverting Near- Infrared Light through Energy Management in Core-Shell-Shell Nanoparticles', *Angew. Chem., Int. Ed.*, **2013** (DOI: 10.1002/anie.201306811).

# Research Overview

## Rare-earth Upconversion Nanoparticles (NPs) – Design, Fabrication and Applications

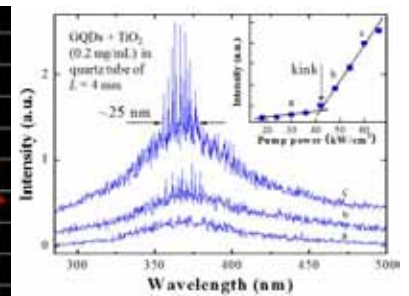
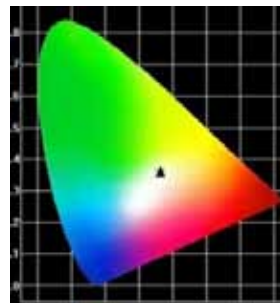
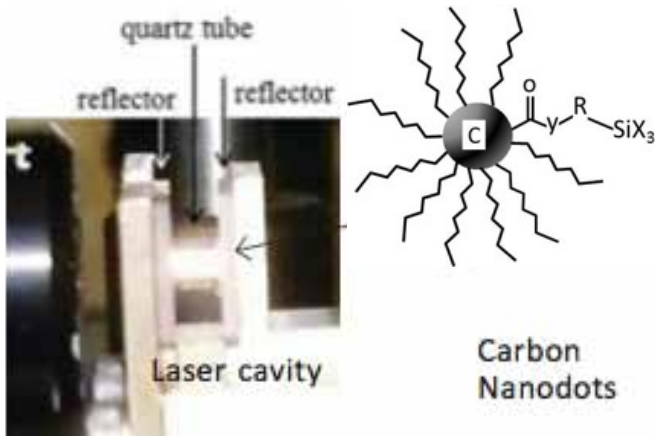


► Design & fabrication of core/shell NPs for achieving amplified spontaneous emission

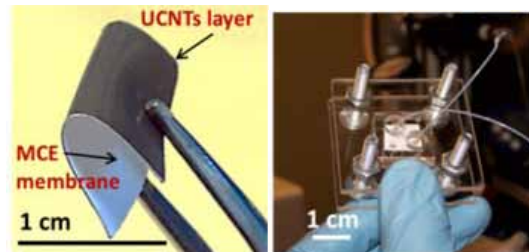
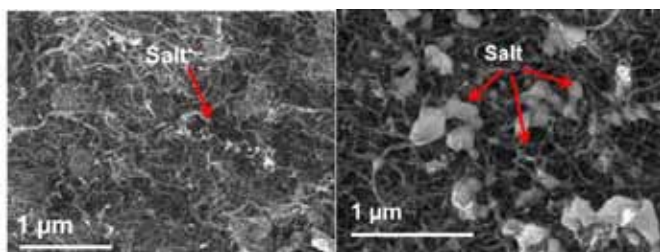


► Experimental setup & demonstration of lasing emission from core/shell/shell NPs

## Carbon Nanomaterials – Design, Fabrication and Applications



► Using carbon nanodots as the gain medium to realize white-light lasing emission



► Salt removal by ultralong surface modified carbon nanotubes-mixed cellulose ester membranes