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大学院学生各位
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基盤医学特論　開講通知
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題目 : Upconversion Nanocrystals: A New Class of Luminescent Probes for Molecular and Biomedical Imaging

講師：LIU Xiaogang, PhD.
Professor, National University of Singapore

日時：平成 30 年 2 月 15 日（木）　14:00－15:30
Time and Date: 14:00－15:30　15th February (Thu), 2018

場所：　環境医学研究所　北館セミナー室（東山キャンパス）
Room: Research Institute of Environmental Medicine, North Building, N201 (Higashiyama Campus)

＊関係講座部門等の連絡担当者：環境医学研究所・神経性調節学 山中章弘（3864）
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使用言語：　英語　＊事前連絡は不要です。Lecture in English.　No registration required.

Lanthanide-doped nanoparticles exhibit unique luminescent properties, including a large Stokes shift, a sharp bandwidth of emission, high resistance to optical blinking, and photobleaching. Uniquely, they can also convert long-wavelength stimulation into short-wavelength emission. These attributes offer the opportunity to develop alternative luminescent labels to organic fluorophores and quantum dots. In recent years, researchers have taken advantage of spectral-conversion nanocrystals in many important biological applications, such as highly sensitive molecular detection and autofluorescence-free cell imaging. With significant progress made over the past several years, we can now design and fabricate nanoparticles that display tailorable optical properties. In particular, we can generate a wealth of color output under single-wavelength excitation by rational control of different combinations of dopants and dopant concentration. By incorporating a set of lanthanide ions at defined concentrations into different layers of a core-shell structure, we have expanded the emission spectra of the particles to cover almost the entire visible region, a feat barely accessible by conventional bulk phosphors. In this talk, I will highlight recent advances in the broad utility of upconversion nanocrystals for multimodal imaging, bio-detection, display and photonics.

参考文献

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