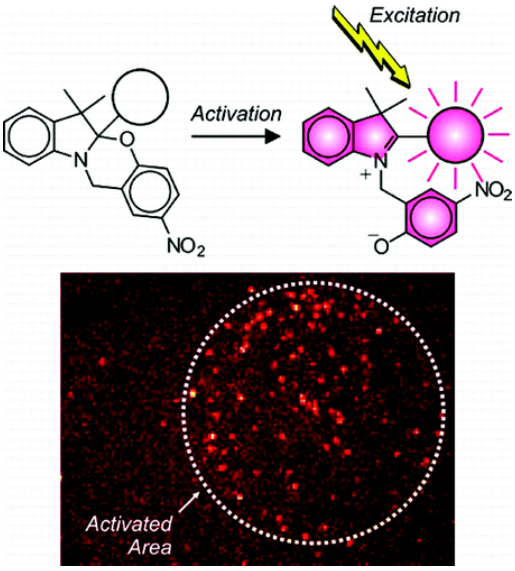
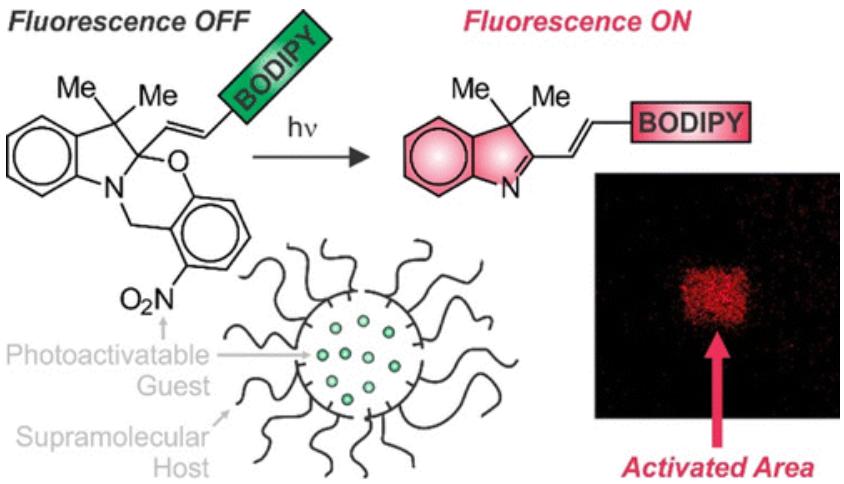
第 26 回機能物質化学講演会のお知らせ

日時：2016 年 5 月 31 日（火）午前 10 時 30 分～12 時

場所： J 棟 505 室

概要：青山学院大学機能物質化学講演会では、機能性分子科学の研究でご活躍されている世界的に著名な先生方をお招きして最先端の研究をご紹介して頂いております。今回は、フォトクロミズム研究でご活躍されているマイアミ大学の Françisco M. Raymo 教授をお招きし、フォトクロミック分子を使った蛍光スイッチングに関する最新の研究成果についてご講演して頂きます。





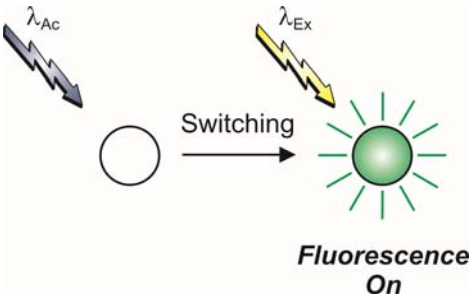
世話人：化学・生命科学科　阿部二朗（内線：46225）

Activatable Fluorophores

Françisco M. Raymo

Laboratory for Molecular Photonics, Department of Chemistry, University of Miami

The goal of our research program is the development of operating principles to activate the fluorescence of organic chromophores under either chemical or optical control.[1–3] In particular, we design molecules capable of switching from a nonemissive to an emissive state, upon either acidification or illumination at an appropriate activation wavelength (λ_{Ac}), and then produce fluorescence, after irradiation at a given excitation wavelength (λ_{Ex}). The former mechanism can transduce pH changes into fluorescence signals and permits the imaging of acidic intracellular compartments with excellent contrast. The latter mechanism can activate fluorescence within a defined region of space at a specific interval of time, relying exclusively on the interplay of beams illuminating the sample at λ_{Ac} and λ_{Ex}. Such level of spatiotemporal control offers the opportunity to overcome diffraction and reconstruct fluorescence images with spatial resolution at the nanometer level as well as to monitor dynamic events in real time with the sequential acquisition of fluorescence images. We are particularly interested in exploring these operating principles for either chemical or optical fluorescence activation to detect cancer cells, visualize intracellular substructures with nanoscaled resolution and track the translocation of species within living organisms. Thus, our fundamental investigations on molecular switches can eventually lead to the realization of innovative imaging probes for a diversity of bioanalytical applications.



1 "Photoactivatable Synthetic Dyes for Fluorescence Imaging at the Nanoscale": F. M. Raymo, *J. Phys. Chem. Lett.*, **2012**, *3*, 2379–2385

2 "Photoactivatable Fluorophores": F. M. Raymo, *ISRN Phys. Chem.*, **2012**, 619251-1–15

3 "Photoactivatable Synthetic Fluorophores": F. M. Raymo, *Phys. Chem. Chem. Phys.*, **2013**, *15*, 14840–14850