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Dr. Francisco Raymo

Department of Chemistry, University of Miami, FL

Photoswitchable Luminescent Probes for Fluorescence Nanoscopy

Tuesday Oct. 20, 2009 1:00pm
Otto Maass room 10

The goal of our research program is the development of photoswitchable luminescent probes to image biological samples with nanoscaled resolution. Specifically, we synthesize compounds comprising luminescent and photochromic fragments in their molecular skeletons. Their photochromic component switches from a colorless state to a colored form upon irradiation at an appropriate wavelength and reverts thermally back to the original state. These photoinduced and reversible transformations are designed to control the emission intensity of the luminescent partner. As a result, the ability of these luminophore-photochrome assemblies to emit electromagnetic radiations can be modulated under the influence of optical stimulations. In particular, we can engineer compounds able to switch from an emissive form to a nonemissive species, or *vice versa*, under irradiation and then return spontaneously to the original state. The unique combination of photochemical and photophysical properties of these molecular assemblies, together with appropriate biolabeling protocols and multiphoton excitation schemes, offer, in principle, the opportunity to overcome the diffraction barrier that plagues conventional fluorescence microscopy and, hence, visualize subcellular components with nanoscaled precision.

Everyone is welcome
