

# ZERNIKE INSTITUTE COLLOQUIUM

Thursday, November 7<sup>th</sup>, 2013

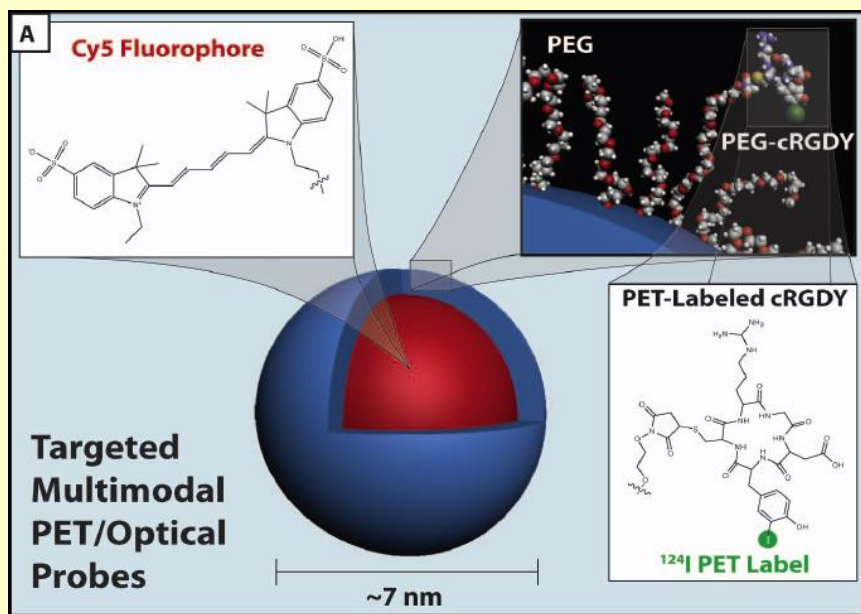
16:00h, Lecture Hall: 5111.0080

Coffee and cakes from 15:30h

## Cornell dots

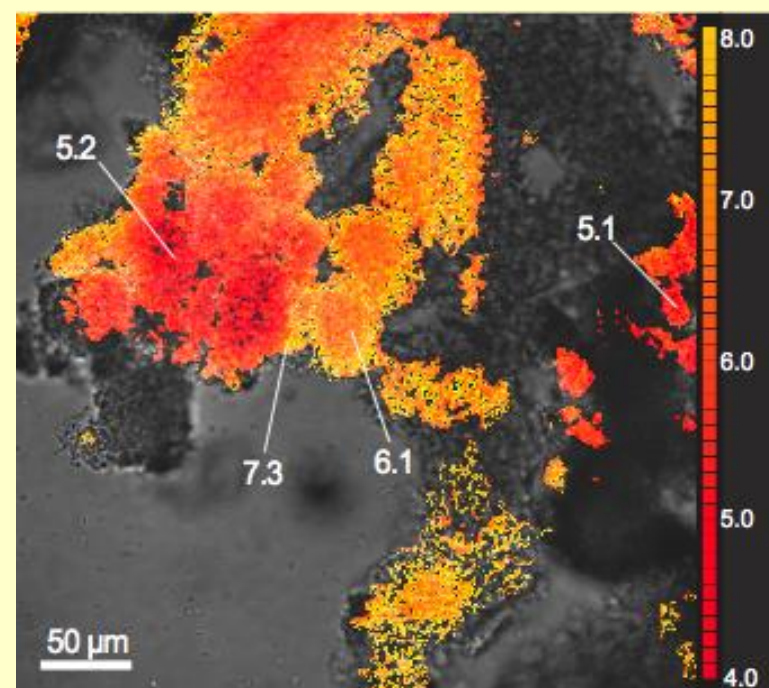
### From fluorescent nanoparticle synthesis to translational clinical applications

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Fluorescent nanoparticles offer enormous scientific and technological promise as labels and photon sources for a range of biotechnological and nanomedicine applications. Many applications require size-controlled, monodisperse, bright nanoparticles that can be specifically conjugated to biological macromolecules and targeted to specific environments.

As an alternative to single molecule fluorophores and quantum dots, a novel class of multifunctional fluorescent silica-based core-shell nanoparticles referred to as “Cornell dots” or simply “C dots” derived through a modified Stöber polycondensation reaction hold particular promise since they are more biocompatible and are water soluble, and silica chemistry is well established and extremely versatile.



The presentation will report on results on C dot synthesis, characterization and optical properties. Various life sciences applications are demonstrated with specific developments towards smaller than 10 nm sized PEGylated labels for nanomedicine. The latter includes discussion of the first dual-modality (optical/PET) hybrid nanoparticle of its class and properties receiving investigational new drug (IND) FDA approval for first in-human trials in the US.