

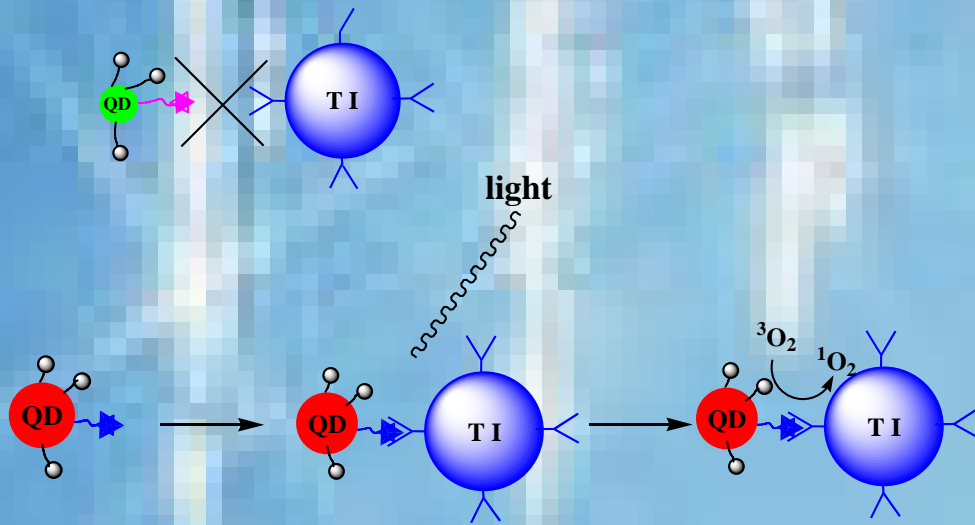
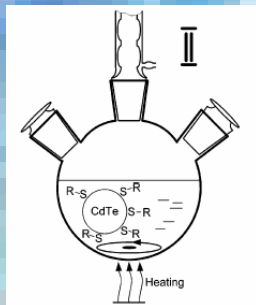
July 21-23, 2006 PREM Retreat

# **New Photosensitizers based on Nanomaterials**

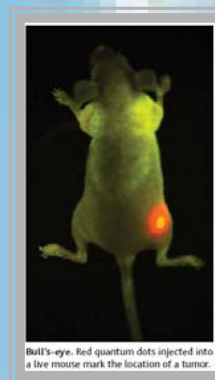
Lixin Shi and Matthias Selke\*

Cal State L.A.

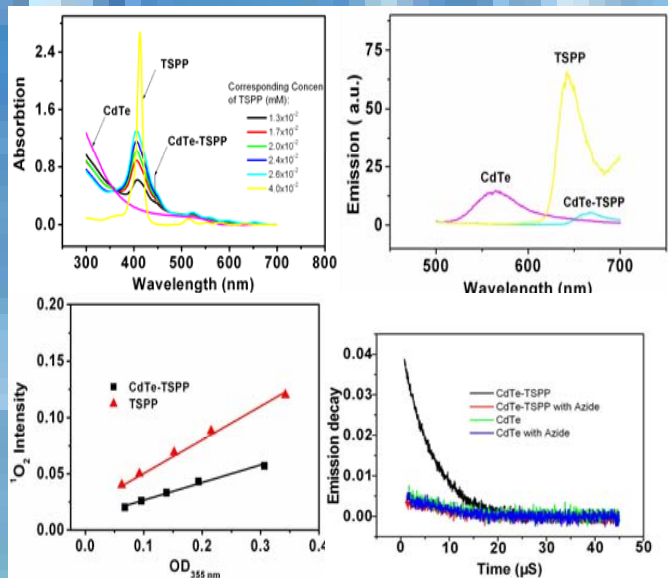
# QDs-Photosensitizers Nanocomposites: Bifunctional with high Singlet Oxygen Generation and Fluorescence Lable



**\$1.60 ~ 1000 mL  $1 \times 10^{-4}$  M**



Animal experiment is doing with UCLA



Excitation at 355 nm

Quantum Yields of Singlet Oxygen 0.43

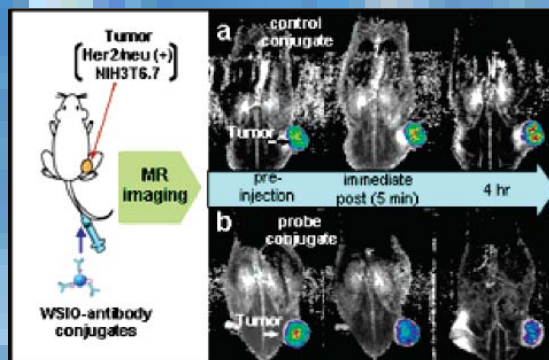
Selke, M. et al. *JACS*, **2006**, 128,6278.

“Nanoparticles Open New Avenues for Photodynamic Therapy”

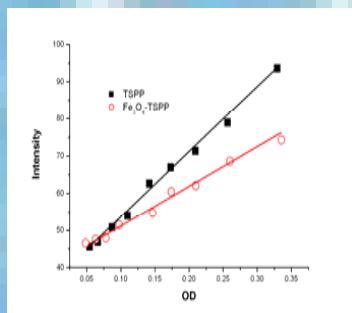
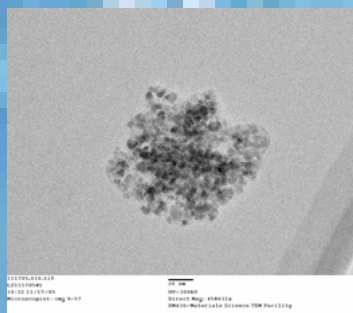
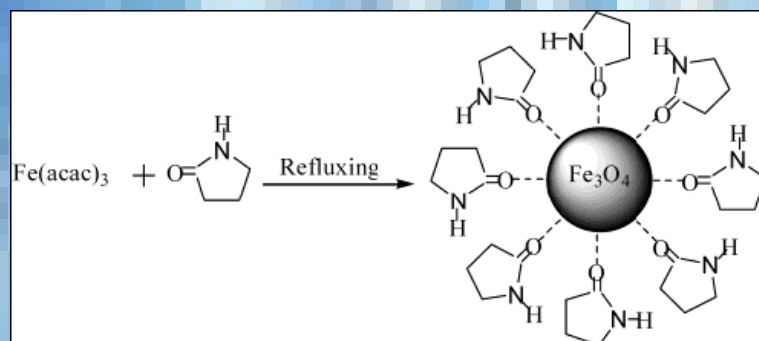
--- NCI Nanotech News, June 5, 2006

Cell experiment is undergoing with USC

# Water soluble Fe<sub>3</sub>O<sub>4</sub>-Organic Dye Nanocomposite: Towards Magnetic Resonance Imaging and Photodynamic Therapy



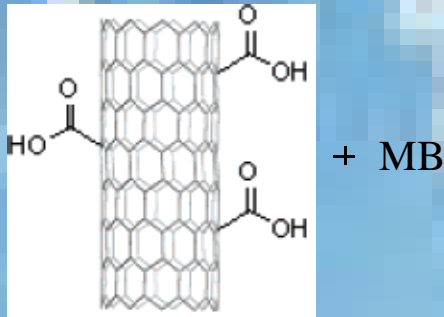
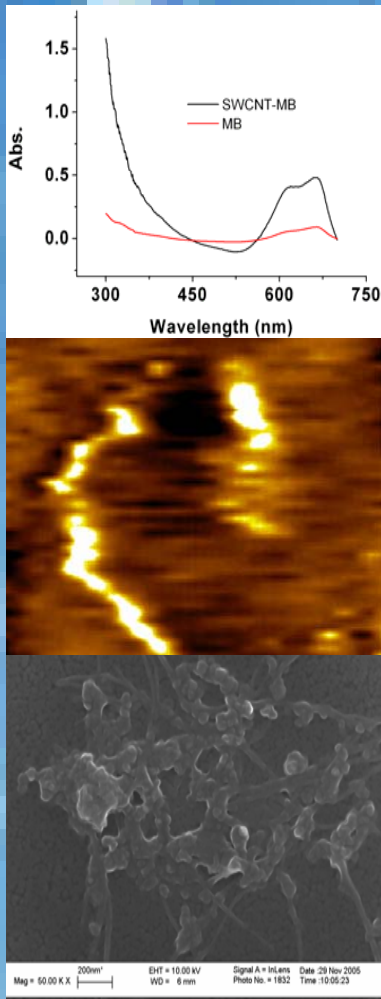
Cheon, *et al. JACS*, 2005, 127, 12387



QY of singlet oxygen of composite: 0.25  
Free TSP as reference

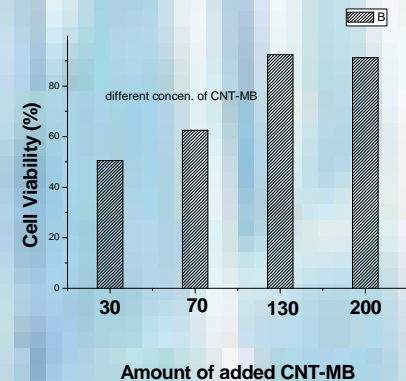
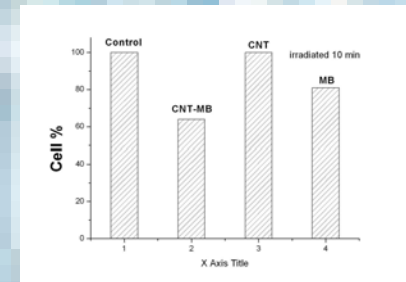
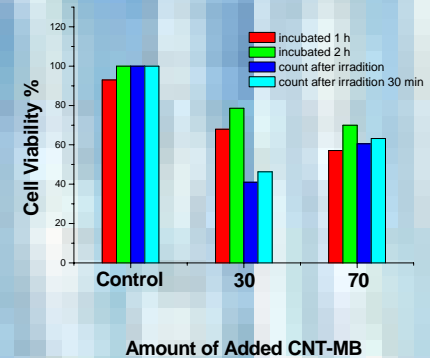
- future work:
1. Measure magnetic properties (SQUID)
  2. Animal experiments

# Single-Walled Carbon Nanotube --- Methylene Blue Nanocomposite: From Nanostructure to Photodynamic therapy



Incubated with HL60 cell  
Irradiated at 400 nm

“Positive Therapy”



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