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***CONJUGATED POLYELECTROLYTES: SELF-ASSEMBLY, AMPLIFIED
QUENCHING AND APPLICATION TO BIOSENSORS***

Tuesday Feb. 26, 2008 1:00pm
Otto Maass room 10

Conjugated polyelectrolytes (CPEs) are π -conjugated polymers such as poly(phenylene vinylene) (PPV) and poly(phenylene ethynylene) (PPE) which contain ionic side groups. CPEs are soluble in polar solvents, including water, and they are highly fluorescent. The lecture will discuss fundamental studies of the properties of CPEs, with emphasis on optical spectroscopy (absorption and fluorescence), self-assembly into aggregates and amplified fluorescence quenching. Several applications of CPEs will also be described, including the use of CPE films in solar cells and the use of the amplified fluorescence quenching effect to construct highly sensitive biosensors.

Relevant Publications

1. Conjugated polyelectrolytes: Synthesis and applications, Pinto, M. R.; Schanze, K. S. *Synthesis-Stuttgart* 2002, 1293-1309.
2. Amplified Quenching of a Conjugated Polyelectrolyte by Cyanine Dyes, Tan, C.; Atas, E.; Müller, J. G.; Pinto, M. R.; Kleiman, V. D.; Schanze, K. S. *J. Am. Chem. Soc.* 2004, 126, 13685-13694.
3. Amplified Fluorescence Sensing of Protease Activity with Conjugated Polyelectrolytes, Pinto, M. R.; Schanze, K. S. *Proc. Natl. Acad. Sci. U.S.A.* 2004, 7505-7510.
4. Taranekar, P.; Qiao, Q.; Jiang, H.; Schanze, K. S.; Reynolds, J. R., "Hyperbranched Conjugated Polyelectrolyte Bilayers for Solar Cell Applications", *J. Am. Chem. Soc.* 2007, 129, 8958-8959.
5. Jiang, H.; Zhao, X.; Schanze, K. S., "Effects of Polymer Aggregation and Quencher Size on Amplified Fluorescence Quenching of Conjugated Polyelectrolytes", *Langmuir* 2007, 23, 9481-9486.
6. Zhao, X.; Liu, Y.; Schanze, K. S., "A Conjugated Polyelectrolyte Based Fluorescence Sensor for Pyrophosphate", *Chem. Commun.* 2007, 2914-2916.

Everyone is welcome
