

# Red River Valley Local Section American Chemical Society

## Next Meeting

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**Wednesday, 15 October 2008 in Fargo**

Speaker : Dr. Wayne E. Jones , State University of New York at Binghamton

Location: Dunbar Hall, Room 152, NDSU Campus.

▲ 18:00 Presentation:

6:00 PM

- Following presentation Dinner: Green Mill, 3340 13<sup>th</sup> Avenue South.

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### ***Speaker's presentation:***

#### ● **Molecular Wires as Chemosensors and New Materials for Electronic Packaging.**

Developing chemosensory devices selective for transition metals and other pollutants represents a critical need for the environmental community. Fluorescent conjugated polymer chemosensors have several advantages over small molecule sensors due to their high sensitivity, processibility, and ease of modification. Previously, our group has synthesized a series of fluorescent polymerchemosensors with a poly[p-(phenyleneethylene)-alt-(thienyleneethynylene)](PPETE) conjugated backbone. The transition metal loading dependence of these materials provides fundamental information regarding the role of energy transfer in the fluorescent chemosensor quenching mechanism. Recently, this work has been extended by addition of a N,N,N-trimethylethylenediamino receptor group which undergoes photoinduced electron transfer (PET) to the polymer exciton. Upon binding to analytes such as protons or some transition metal cations, the PET process is disabled and the emission from the polymer is enhanced. This system has been found to be particularly sensitive to Hg<sup>2+</sup> ions that cause the fluorescence of the polymer to increase by a factor of ~ 2.7. Synthesis, characterization and photophysical behavior of this polymer will be discussed as well as its application to future Turn-on sensor designs.



● **Biographical Sketch.** Dr Wayne Jones is Professor of Chemistry, Director of Graduate Studies, and Director of the Center for Learning and Teaching at the State University of New York at Binghamton. He received his BS from St. Michaels College and his Ph.D. in Inorganic Chemistry from the University of North Carolina at Chapel Hill working with T. J. Meyer. After 18 months of a post-doctoral fellowship at the University of Texas at Austin, he declined an NIH post-doctoral fellowship to join the faculty at Binghamton University. He has published over 80 articles and review chapters on his work in the areas of photoinduced electron and energy transfer in macromolecular systems including molecular wires, electrically and thermally conducting nanomaterials, and photoinduced electron transfer dynamics in organic/inorganic hybrid conducting polymer materials. Current research

efforts are supported by grants from the NIH, NSF, SRC, and NIST as well as several industrial partners. His teaching interests involve long term curriculum development in chemistry including; more expanded use of technology in introductory chemical education, use of interactive multi-media materials for self-directed learning, and the design of new advanced undergraduate laboratories based on the guided inquiry approach. In 1996 he was appointed Director of the Center for Learning and Teaching and continues to work with faculty on innovative, student centered approaches to learning. He has received several teaching awards including the State University of New York Chancellors Award for Excellence in Teaching in 2001. He can be reached at the Chemistry Department and Institute of Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902. [wjones@binghamton.edu](mailto:wjones@binghamton.edu); <http://chemistry.binghamton.edu/JONES/jones.htm>