



CHEMISTRY SEMINAR 291

Electronics Going Organic: Imparting Performance and Function in Ordered vs. Disordered Conjugated Polymers

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ABSTRACT

Conjugated polymer is a class of materials that possess the electrical, electronic, magnetic, and optical properties of a metal or semiconductor while retaining the processability and mechanical properties associated with a conventional polymer. Electronic devices using such organic components as active layers, including solar cells, field-effect transistors or sensors, can be created via low-cost, solution-based routes. However, the performance of organic electronics is often inferior to their inorganic counterparts due to the dearth of fundamental understanding of these nascent materials. In this talk, I will discuss (1) my graduate work on using highly ordered oligomer crystals as model systems for deciphering the fundamental structure-property relationships of the parent conjugated polymers; (2) my postdoctoral work on high performance, strain-accommodating disordered conjugated polymers for epidermal and wearable electronic applications. I will also briefly introduce the research activities unfolding in my current group, including biomimetic assemblies, 3D printable functional polymers, and organic structural metamaterials.

BIO:

Dr. Yue (Jessica) Wang is an Assistant Professor in Materials Science and Engineering at the University of California, Merced. Her research interests center around biomimetic composites, structural metamaterials, and 3D printing of functional polymers. She received her B.S. in Chemistry from the University of California, Los Angeles (UCLA). After a one-year stay at Fibron Technologies working on transparent conductors, she returned to UCLA for a Ph.D. in Inorganic Chemistry under the guidance of Prof. Richard Kaner, investigating the structure-property relationships of organic electroactive nanocrystals. Subsequently, she carried out postdoctoral research with Prof. Zhenan Bao at Stanford University, developing strain-accommodating conjugated polymers for wearable electronics and bioelectronics. Dr. Wang is the recipient of a number of fellowships and awards, including the ACS Excellence in Graduate Polymer Research Award, NSF-Graduate Research Fellowship, and Norma Stoddart Award for Excellence in Graduate Research and Exemplary Citizenship.

