

Stimuli-Directing Liquid Crystalline Nanostructures: From Dynamic Photonics to Renewable Energy

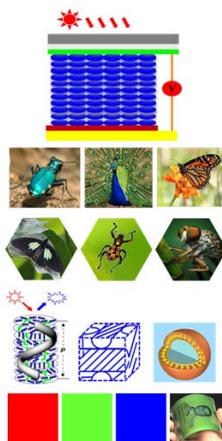


Quan Li

Liquid Crystal Institute and Chemical Physics Interdisciplinary Program, Kent State University

Tuesday, July 3, 10:30 am
102D, Engineering Building I

LECTURE ABSTRACT



Liquid crystals (LCs) represent a fascinating state of matter that combines order and mobility on a molecular and supramolecular level. The unique combination of order and mobility results in that LC is typically “soft” and responds easily to external stimuli. The responsive nature and diversity of LCs provide tremendous opportunities as well as challenges for insights in fundamental science, and open the door to various applications. Conventional nematic LCs have become the quintessential materials of LC displays. With the LC displays ubiquitous in our daily life and annual ~\$200 billion market, the research and development of LCs are moving rapidly beyond display applications and evolving into entirely new and fascinating scientific frontiers. In my talk, I will focus on our recent research and development on stimuli-directing liquid crystalline nanostructures: from dynamic photonics (camouflage, laser steering, photodisplay, etc.) to energy saving and generation.

SPEAKER BIOSKETCH

Quan Li is Director of Organic Synthesis and Advanced Materials Laboratory at Liquid Crystal Institute (LCI), Kent State University, where he is also Adjunct Professor in the Chemical Physics Interdisciplinary Program. He, as a Principal Investigator and Project Director, has directed research projects funded by the Department of Energy (DOE), the Air Force Office of Scientific Research (AFOSR), the Air Force Research Laboratory (AFRL), the Army Research Office (ARO), the Department of Defense Multidisciplinary University Research Initiative (DoD MURI), the National Aeronautics and Space Administration (NASA), and the National Science Foundation (NSF), the Ohio Third Frontier, and Samsung Electronics, among others. He received his Ph.D. in Organic Chemistry from the Chinese Academy of Sciences (CAS) in Shanghai, where he was promoted the youngest Full Professor in Organic Chemistry and Medicinal Chemistry in February of 1998. He was a recipient of the CAS One-Hundred Talents Award (BeiRenJiHua) in 1999. He was Alexander von Humboldt Fellow in Germany. He has won the Kent State University Outstanding Research and Scholarship award. He is a Fellow of the Royal Society of Chemistry, and has been honored as Guest Professor and Chair Professor by several Universities. Li has edited eight books (3 John Wiley & Son, 3 Springer and 2 Wiley-VCH) books in the past seven years, and has coauthored forty chapters including the invited entry entitled "Liquid Crystals" for the prestigious Kirk-Othmer Encyclopedia of Chemical Technology and "Gold Nanorods" for Encyclopedia of Surface and Colloid Science. His current research interest spans from stimuli-responsive smart soft matter, advanced photonic and optoelectronic materials for energy-harvesting and energy-saving, and functional biocompatible materials and nanoparticles to nanoengineering and device fabrications.