"Mesoscale Architectures for Amphidynamic Crystals and Molecular Machines"

Dr. Miguel Ángel García-Garibay
University of California, Los Ángeles

Jueves 4 de octubre, Horario: 15:30-16:30
Auditorio principal de la UPDCE

Bio sketch
Miguel A. Garcia-Garibay received his B.S. degree from the University of Michoacan in Mexico and his Ph.D. from the University of British Columbia in Canada. He was a postdoctoral Fellow at Columbia University in the city of New York before joining the faculty in the Department of Chemistry and Biochemistry at UCLA where he was promoted to full professor. He served as Vice Chair for Education and as chair of the Department and is the current Dean of Physical Sciences. Garcia-Garibay achieved international reputation for work in solid-state organic chemistry, reaction mechanisms, and crystalline molecular machines. He has authored over 210 articles and delivered over 400 lectures worldwide. Among other honors, he is a fellow of the American Association of the Advancement of Science and has been awarded the American Competitiveness and Innovation Fellowship, an NSF Creativity Award, the 2013 Inter-American Photochemical Society Award and the 2015 ACS Cope Scholar Award.

Keywords
molecular machines, dipolar arrays, dendrimers, mesoscale architectures.

Abstract of the conference
Our research group has established the synthetic and analytic infrastructure required to develop a promising new class of materials that operate on the basis of their structurally programmed molecular motion. With a combination of static and rapidly moving, but highly ordered elements, we refer to them as amphidynamic crystals. Amphidynamic crystals can be built with discrete molecular units, supramolecular synthons, extended solids based on metal-organic frameworks, and several other platforms. Among them, molecular rotors are expected to have functions that rely on units designed to rotate or reorient in response to external stimuli, such that they can display induced birefringence, dichroism, second-order non-linear optical responses, and other addressable physical properties. With high order, structurally controlled degrees of freedom, and capable of responding to external stimuli in a predetermined manner, amphidynamic materials are a promising platform for the design of molecular machines. This presentation will illustrate the development of these concepts with a particular emphasis on structures aimed at exploring emergent behavior that arises from dipolar interactions and architectures at the mesoscale.

Agradecemos al grupo de profesores de la FQ-UNAM por el apoyo
otorgado para la participación del plenarista.