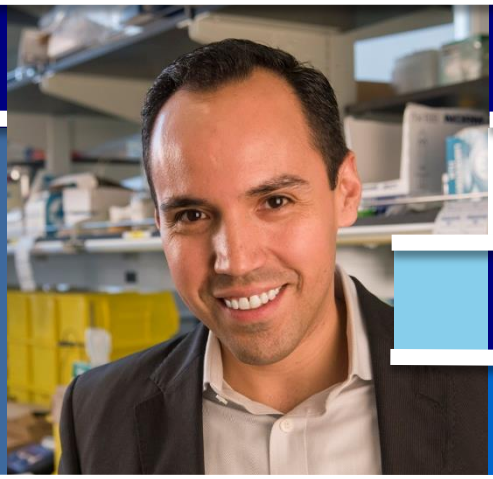
Solvay Seminars in Macromolecular Science & Engineering

Macromolecules Innovation Institute (MII)

VirginiaTech
Invent the Future

Prof. Luis M. Campos

"Thiophene Rust in Single-Molecule Electronics and Singlet Fission"



Columbia University

Associate Professor, Department of Chemistry

Host: Ryan Mondschein (POLY-PMSE)

Abstract: The combination of Barbarella's pioneering work on thiophene-1,1-dioxide (TDO) coupled with the development of Rozen's reagent has allowed us to engineer materials for organic electronics. The controlled chemical oxidation of thiophene engages the lone-pair electrons in sulfur to bond with oxygen, generating TDO, a non-aromatic, diene-like building block with a strong dipole moment. When coupled with other conjugated systems, TDO lowers the LUMO of the resulting material. This talk will discuss the controlled chemical oxidation of polymers, in addition to the exceptional physical properties that arise from small molecules and polymers containing TDO. The importance of these materials in single-molecule electronics and third-generation singlet fission solar cells will be emphasized.

Bio: Luis M. Campos is an Associate Professor in the Department of Chemistry at Columbia University. He was born in Guadalajara, Mexico, and moved at the age of 11 to Los Angeles, California. He received a B.Sc. in Chemistry from CSU Dominguez Hills in 2001, and a Ph.D. from the Department of Chemistry & Biochemistry at UCLA in 2006 working under the supervision of M. A. Garcia-Garibay and K. N. Houk. At UCLA, he was awarded the NSF Predoctoral Fellowship, Paul & Daisy Soros Fellowship, and the Saul & Silvia Winstein Award for his graduate research in solid-state photochemistry. Switching to materials chemistry, he went to UCSB as a UC President's Postdoctoral Fellow to work under the supervision of C. J. Hawker at the Materials Research Laboratory. At Columbia, his group's research interests

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Bio *(cont.)*: lie in polymer chemistry, self-assembly, and organic electronic materials. To date, he has co-authored over 80 articles and 12 patents; and he has received various awards, including the ACS Arthur C. Cope Scholar Award, ONR Young Investigator Award,NSF CAREER Award, 3M Non-Tenured Faculty Award, I-APS Young Faculty Award, the Journal of Physical Organic ChemistryAward for Early Excellence, and the Polymers Young Investigator Award. In addition to these research accolades, Luis has been recognized for his pedagogical contributions by the Cottrell Scholar Award, Columbia University Presidential Teaching Award, and the Camille Dreyfus Teacher-Scholar Award.

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