Chemistry Faculty and their Research Interests

Our Department’s faculty have a wide variety of research interests and hold joint appointments with 1Biosciences, 2Bioengineering, 3Chemical & Biomolecular Engineering, 4Computer Science, 5Earth Science, 6Electrical & Computer Engineering, 7Material Science & NanoEngineering, 8Physics & Astronomy, and 9Civil & Environmental Engineering.


**Pedro Alvarez**7,9, PhD (U of Michigan, 1992). Bioremediation of contaminated aquifers, fate and transport of toxic chemicals, and environmental implication and application of nanotechnology.


**Enrique Barrera**7, PhD (UT Austin, 1987). Formation of hybrid nanotube materials and the development of fully integrated nanotube composites.

**Andrew Barron**7, PhD (Imperial College, U of London, 1986). Chemistry, nanoscale science and materials science of the Group 13 elements leading to the development of new materials and catalysts.


**Cecilia Clementi**3, PhD (International School for Advanced Studies, 1998). Theoretical and computational investigation of protein folding, protein interactions and functions.

**Michael Diehl**2, PhD (UCLA, 2002). Biomotor cooperativity, biomaterials, supramolecular biophysics and molecular bioengineering.


**Jason Hafner**8, PhD (Rice, 1998). Application of nanometer-scale tools and materials to problems of biological and biomedical interest.

**Naomi Halas**2,6,7,8, PhD (Bryn Mawr, 1987). Nanofabrication chemistry and nano-optics.

**Jeffrey Hartgerink**2, PhD (Scripps, 1999). Self-assembly of nanostructured materials with a focus on molecular structures of proteins and peptide based biomaterials for tissue regeneration, drug delivery and other biomedical applications.


**Anatoly Kolomeisky**3, PhD (Cornell, 1998). Theoretical physical chemistry, biophysics and statistical mechanics. Modeling of biological transport systems and protein-DNA interactions, and investigation of nanocars and other artificial nanoscale devices.


**Christy Landes**6, PhD (Georgia Tech, 2003). Experimental physical, biophysical, and nanomaterials physical chemistry; single molecule spectroscopy. Dynamic complexity and its role in biological and synthetic polymer functions.

**Stephan Link**6, PhD (Georgia Tech, 2000). Physical chemistry of nanomaterials, nanophotonics and plasmonics, spectroscopy of individual & coupled nanoparticles with applications in opto-electronics, energy, and medicine.

**Jun Lou**7, PhD (Princeton U, 2004). Nanomaterial synthesis, nanomechanical characterization and nanodevice fabrication for energy, environment and biomedical applications.

**Angel Marti**2,7, PhD (U Puerto Rico, 2004). Development of molecules to diagnose and treat disorders that involve protein aggregates, e.g. Alzheimer’s; development of supramolecular materials based on nanoscale building blocks.
Carrie Masiello\textsuperscript{5}, PhD (U of California, Irvine, 1999). Fundamental mechanisms of the carbon cycle, carbon sequestration, climate change, black carbon, terrestrial-river-ocean biosphere interactions.

Seiichi Matsuda\textsuperscript{1}, PhD (Harvard, 1994). Bioorganic and organic chemistry, terpenoid biosynthesis, enzyme evolution, redesign of enzymes to have new activities, and genomic approaches to find biologically active molecules.

Antonios Mikos\textsuperscript{3,7}, PhD (Purdue U, 1988). Synthetic biodegradable polymers as supportive scaffolds for cells, as conduits for guided tissue growth, as specific substrates for targeted cell adhesion, or as stimulants for a desired cellular response.

Emilia Morosan\textsuperscript{7,8}, PhD (Iowa State, 2005). Design and synthesis of novel magnetic and superconducting materials.

K.C. Nicolaou, PhD (U London, 1972). Specializes in organic chemistry with a focus on the synthesis of natural and designed molecules of biological and medical importance to cancer research.

Jose Onuchic\textsuperscript{1,8}, PhD (Harvard, 1976). Theoretical and computational methods for molecular biophysics and chemical reactions in condensed matter; protein folding funnels as a mechanism for the folding of proteins.

Matteo Pasquali\textsuperscript{3,7}, PhD (Minnesota, 1999). Interaction of flow and liquid micro- and nanostructure in complex fluids, with application to the manufacturing of engineered materials.

George Phillips\textsuperscript{1}, PhD (Rice, 1976). Three-dimensional structure and dynamics of proteins to their biological functions, computational biology.

Emilie Ringe\textsuperscript{7}, PhD (Northwestern, 2012). Atomic resolution and three dimensional elemental mapping of alloy nanoparticles relevant for catalysis applications.

Peter Rossky\textsuperscript{3}, PhD (Harvard, 1978). The elucidation of the fundamental molecular-level origins of chemical behavior in condensed phases and clusters.

Gustavo Scuseria\textsuperscript{7,8}, PhD (U Buenos Aires, 1983). Development of theoretical and computational quantum chemistry techniques (many in the Gaussian program). Application of quantum mechanics to predict the structure and properties of molecules.

Isabell Thomann\textsuperscript{6,7}, PhD (U of Colorado, Boulder, 2009). Energy, photocatalysis, ultrafast spectroscopy and nanophotonics.

Ned Thomas\textsuperscript{3,7}, PhD (Cornell, 1974). Polymer physics and engineering, photonics and phononics and mechanical and optical properties of block copolymers, liquid crystalline polymers, and hybrid organic-inorganic nanocomposites.

James Tour\textsuperscript{4,7}, PhD (Purdue, 1986). Organic chemistry, materials science, polymer chemistry, nanoscience, and nanotechnology.

R. Bruce Weisman\textsuperscript{7}, PhD (U Chicago, 1977). Basic studies of carbon nanotube spectroscopy and photophysics and related analytical, mechanical engineering and biomedical applications.

Kenton Whitmire, PhD (Northwestern, 1982). Inorganic and organometallic chemistry, precursor design for advanced nanomaterials, structural and mechanistic chemistry, catalysis, bioactivity of heavy main group elements.


Han Xiao\textsuperscript{1}, PhD (Scripps Research Institute, 2015). Synthetic chemistry, chemical biology, molecular biology, cancer biology, and immunology.

Boris Yakobson\textsuperscript{7}, PhD (Russian Acad. of Sciences, 1982). Theory and modeling of materials derived from macroscopic and fundamental molecular interactions.