The Hinde Group has seen two new members join in the past year. Patrick Moehlen (B.S. University of Maryland) joined in 2005 and Brent Magnusson (B.S. Gustavus Adolphus College) joined the group in 2006. Both are working on problems related to the infrared spectroscopy of solid hydrogen crystals containing chemical dopants. They both presented posters at the March 2006 national ACS meeting in Atlanta.

In August 2005, Dr. Hinde received a travel award from the National Research Council to attend the biennial meeting of the International Union of Pure and Applied Chemistry (IUPAC) and a satellite meeting on physical chemistry education. In January 2006, he began a two-year term as the U.S. representative to IUPAC’s Commission on Physicochemical Symbols, Terminology and Units. He will spend a six-month sabbatical in 2007 at the Department of Chemistry at the University of Helsinki working with an experimental spectroscopist (Markku Rasanen) and a theoretical chemist (Lauri Halonen) on problems related to the infrared spectroscopy of molecules in cryogenic matrices.

It has been a busy year for the Kabalka group. Kabalka and his students have made presentations at:

- 12th International Congress on Neutron Capture Therapy Meeting, Takamatsu, Kagawa, Japan, October 2006
- Boron in the Americas 10th International Meeting, San Juan, Puerto Rico, August 2006
- International Isotope Society Meeting, Edinburgh, Scotland, July 2006
- Society of Nuclear Medicine Annual Meeting, San Diego, California, June 2006
- 231st American Chemical Society National Meeting, Atlanta, Georgia, March 2006

In the past year seventeen journal articles have appeared summarizing the results of the students’ thesis work.

Dr. Jeffrey Kovac has also been a busy member of the faculty. Being the Director of Undergraduate Studies he spearheaded the Phase 1 technology upgrade for the undergraduate laboratories. Also, in August of 2005 Dr. Kovac was the general chair and organizer of the Summer Symposium of the International Society for the Philosophy of Chemistry hosted at the University of Tennessee, Knoxville.

Dr. Kovac’s book “The Ethical Chemist” was translated into Japanese in 2005 and in 2006 an article in the Fall 2006 ACS Graduate Education magazine named it a “must have” book on ethics in chemistry.

Amazingly it has been almost five years since the Larese laboratories arrived in Buehler-Dabney Hall and at Oak Ridge National Laboratory (ORNL) from Brookhaven National Laboratory. While the first neutrons have arrived at the Spallation Neutron Source at ORNL in midsummer 2006 our group continues to work at the spallation neutron source at ISIS just south of Oxford, England and the Institut Laue-Langevin in Grenoble, France. Our materials chemistry and neutron scattering group is currently investigating the synthesis of and molecular adsorption on nanomaterials. The applications of this research are numerous and will affect the cosmetic, oil, environmental, and pharmaceutical industries around the world. Funding for the group comes from the Department of Energy, Basic Energy Science, Materials Science Division and the National Science Foundation, Division of Materials Research.

In addition to work on nanomaterials, Prof. Larese heads an international team to design and build, VISION, the next generation neutron analogue of a vibrational spectrometer for the Spallation Neutron Source at ORNL. The project is continuing to be supported by the National Science Foundation. The Larese group’s neutron work involving hydrogen dynamics on the MgO(100) surface was highlighted in the annual report of the Rutherford Appleton’s ISIS Neutron Spallation Source and on the cover of this summer’s DOE’s Hydrogen Program Review document. Recent opportunities for the group’s work to be featured and discussed on the world stage include invited presentations at: the DOE Hydrogen Conference, Washington, DC, the CONTENT neutron workshop at the Institut Laue Langevin in Grenoble, the Swedish Research Council Meeting on the European Spallation Source in Lund, Sweden and the XV International Materials Research Congress (IMRC), Cancún, Mexico on Neutron Opportunities and Obstacles for Nanoscience.

The Larese group continues to grow and currently consists of six graduate students and two post-doctoral research associates. All students have been coauthors on contributed presentations at the International Neutron Scattering Conference in Sydney, Australia, the American Physical Society Meeting in Baltimore, and the American Neutron Scattering Conference in Illinois over the last 10 months. Sami Chanaa (porous silica spheres), Michael Felty (nanometer scale porous anodic alumina), Lillian Frazier (hydrogen adsorption), and Peter Yaron (alkane adsorption) have all successfully passed both the cumulative exams and the Original Research Proposal (ORP) and are currently working on their Ph.D. dissertation projects involving synthesis, thermodynamics and neutron scattering. Andi Barbour (ethylene and dissolution of geo-related metal oxides) recently joined the group and is currently working on her ORP.
Continued on page 17
The past year has seen a significant change in group membership in the Turner group; Megan Bragg (Ph.D. 2005), Cara Nygren (Ph.D. 2005), Michelle Dolgos (M.S., 2005) and Jamie Molaison (M.S., 2006) have all graduated. Former student Robert Saccci graduated and is now a graduate student in the Department of Chemistry, University of Victoria, Canada. Quianna Johnson took a position with Pfizer and Janine Tesserzik became a missionary in Germany. Ben Estes and Onome Swader joined the group as graduate students.

The current research group consists of Andy Colvin, Mike Blanchard, Onome Swader and Ben Estes (graduate students) and Elizabeth Jacobs, Roger Mason, Yuxi Duan, Mauricio Valenzuela, and Brad O’Dell (undergraduate students). Both Elizabeth and Brad were admitted into the College Scholars program in the Fall of 2006.

The group continues to be involved in the MPS program and hosted Frank Wood (Central High School) over the summer in the lab. Recruiting trips were made to Erskine College and Florida Institute of Technology and a successful summer in the lab. The group was visited by Prof Chick Wilson (University of Glasgow) and Dr. Thomas Proffen (LANSCE, Los Alamos National Laboratory). An invited talk was given at the University of Oxford (Physical and Theoretical Chemistry Laboratory) and there is a planned invited talk at the Spring National Meeting at Chicago for 2007.


Cara Nygren is now a postdoctoral research assistant at Brandeis University in the Petsko Group (protein modeling and crystallography) after spending a year with Prof. Philip Coppens at SUNY Buffalo (charge density). Michelle Dolgos is now a Ph.D candidate at Ohio State in the Woodward group and Jamie is a scientific assistant for the high pressure diffractometer at the Spallation Neutron Source. Sylvia McLain (Ph.D. 2004) is just about to finish her NSF international post-doctoral fellowship at the ISIS spallation neutron source (Rutherford Appleton Laboratory, UK) and has a post-doctoral position jointly between the University of Oxford (Tony Watts, Biochemistry) and ISIS (Alan Soper, Disordered Materials) working on biological structures in solution.

Dr. Xue and his group have seen some exciting times! In 2005-2006 the group experienced a large expansion when four new students joined - Julia Covington, Royce Dansby-Sparks, Brenda Dougan, and Tara Williams. In 2005, Dr. Xue’s group received a NSF grant to study chemistry in the formation of microelectric materials. These microelectric materials include gate oxides and Si-containing diffusion barriers. The group has also been studying new reliable methods for the analysis of chromium in biological fluids to assess chromium deficiency and the effect of chromium as adjuvant therapy for type 2 diabetes. With support from the National Institutes of Health, this group has been developing a novel application of Advanced Oxidation Process in degrading biological/organic species in biological fluids, and converting chromium in different oxidation states.

In the past year Dr. Xue was awarded a British Royal Society Kan Tong Po Visiting Professorship and spent several weeks over the Summer of 2006 visiting Hong Kong University of Science and Technology.

The Zhao group is steadily growing and pushing forward in its research. In the Summer of 2006 the Zhao group was awarded a 3-year NSF regular grant for $285,000 to research “smart” polymers that are design to be thermosenstive in water. These responsive soft materials have the potential applications in smart coatings/adhesives. Triggered release of substances, catalysis, biotechnology, and nanotechnology. The Zhao group has also developed a unique strategy to synthesize well-defined mixed polymer brushes. These brushes have been demonstrated to respond to environmental changes, exhibiting different surface structures and properties. This project was supported by the ACS Petroleum Research Fund and the Ralph E. Powe Junior Faculty Enhancement Award.

The current group consists of four graduate students, one undergraduate student, and three visitors. We are looking forward to welcoming more graduate and undergraduate students to join us in the coming semesters.
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