**The Future of Chemistry**

Chemistry is at the core of basic and applied research to enhance human, environmental and economic health. It is the central science, essential to our understanding of the natural world, and provides the fundamental underpinning to diverse fields such as biology, material science, nanotechnology, and environmental science. Many of the critical problems that we are facing in the 21st century are rooted in the use and cycling of materials and energy; both processes are fundamentally based in chemistry. Thus the solutions to these problems require a combination of molecular scale understanding and applications of that knowledge to practical problems.

Chemistry is a key component in the goal of a sustainable society. Among the critical 'grand challenges' are:

- Conversion of solar energy to chemical or electrical energy.
- Designing of new catalysts for efficient chemical conversions.
- Enhancing our ability to use renewable feedstock for chemical processes.
- Increasing our understanding of biological systems at the molecular level.
- Understanding the molecular basis of disease and disease interventions.
- Harness the unique properties of nano-scale materials.
- Unraveling the feedbacks that control the global cycling of carbon, nitrogen, and other elements.
- Analytical methods for real-time detection of chemical species at low levels in complex matrices.
- Incorporating 'green chemistry' into all stages of chemical development and processing.
- Broad education to both scientific and non-science audiences on central role of chemistry in reaching sustainability.

Each of these challenges includes experimental and theoretical aspects, and they all require an interdisciplinary approach in order to fully realize their benefits to society. These are large and complex problems, but contributions will be made in small steps in many laboratories around the world.
Our department must balance the needs of providing a broad graduate and undergraduate education in fundamental chemical principles with an interdisciplinary outlook that actively engages with other disciplines working on chemistry-related problems.