



**Joint Seminar Series of the
CENTRE FOR RESEARCH IN MOLECULAR MODELING
MERCK FROSST and the
DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY**

September 30, 2005, 2:30 pm - Concordia University SP-S110

Non-Covalent Interactions in Chemistry

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In the 20th Century, our concept of chemistry was generally restricted to the making and breaking of covalent bonds. In the 21st Century, the focus is shifting to non-covalent interactions. Ion-molecule, hydrogen bond and van der Waals interactions, with their variable strengths, naturally compete in complex biological, material and atmospheric chemical processes. Understanding competitive interactions at the molecular level is key to gaining insight into these processes as well as to modify or alter them. The synergistic combination of infrared spectroscopy and theoretical *ab initio* methods are applied to size- and composition-selected molecular clusters. These serve as models of fundamental areas, such as ion transport and selectivity, self-assembly and nanotechnology, atmospheric surface chemistry, solvation and interfaces.

Professor James M. Lisy received his B.S. degree from Iowa State University in 1974 and his Ph.D. from Harvard University in 1979. He was then a National Science Foundation Post-Doctoral Fellow at University of Berkeley before joining the faculty at University of Illinois Urbana-Champaign in 1981. Professor Lisy has collected a number of honors and awards such as the Camille & Henry Dreyfus Award and the Alfred P. Sloan Fellowship, and has served on committees such as the National Science Foundation Review Panel or the Advisory Committee of the American Chemical Society - Petroleum Research Fund. He was also a Visiting Scientist at the Max Planck Institute in Göttingen, Germany in 1989, a Visiting Scholar at Purdue University and a Visiting Professor at the Institute for Molecular Science, Japan in 1998, a Chercheur Associé at CNRS in Toulouse, France in 2004 and a Wilsmore Fellow at University of Melbourne, Australia in 2005. He was Chair of the Gordon Research Conference on Molecular and Ionic Clusters in 2002 and Associate Head of the Department of Chemistry at University of Illinois Urbana-Champaign from 2002 to 2005. He is currently a Fellow of the American Physical Society, a member of the Editorial Board of the Journal of Chemical Physics and a Senior Editor of the Journal of Physical Chemistry. His research interests are in chemical physics.

