



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

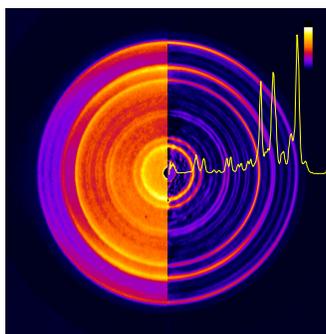
December 6, 2002, 2:15 pm - Concordia University H-1070

**Imaging of Excited State Dynamics**

**Prof. Hans-Peter Looch**

**Department of Chemistry , Queen's University**

In this talk I will present a new approach to obtain information about potential energy curves and spectroscopic transitions using the "velocity-map imaging technique". Our group has set up a laser-spectroscopy lab that is making use of this technique to extract information



about excited and superexcited states of small molecules. While information on bound excited states is readily obtained using a number of "conventional" spectroscopic techniques, it is more difficult to identify and characterize repulsive electronic states. Complete correlation of the parent and all fragment states can help not only to characterize repulsive excited states but also to determine their interactions. Finally, superexcited states are molecular states of the neutral molecule, which lie typically above the first ionization potential.

As will be illustrated using HCl as an example, we can learn about the energetics of these states as well as about their interactions with other repulsive states and with ionic states using the velocity map imaging technique.

Hans-Peter Looch graduated in 1991 with an "engineering chemistry" degree ("Dipl.-Ing.") from the Technical University of Darmstadt, Germany. He obtained the Ph.D. degree from the University of Victoria in 1996, working on the photodissociation dynamics of a number of diatomic and triatomic molecules under the direction of Dr. Charles Qian. He spent about two years until 1998 as a postdoctoral fellow in the Spectroscopy Group of the Steacie Institute, NRC, Ottawa, where he worked with Dr. Benoit Simard on the spectroscopies of high-lying states of transition metal containing molecules. After a brief stay at the University of Nijmegen, The Netherlands, in 1998, Peter joined the Chemistry Department of Queen's University as an Assistant Professor in 1999. He is active in two very different areas of physical chemistry, one related to the studies of excited states and the other one to instrument development using fiber optic absorption sensors.

