The Third Femtochemistry Conference: An Introduction

In 1993 a new series of conferences within the ultrafast spectroscopy field was initiated with the Femtochemistry Conference organized by Jörn Manz in Berlin. The success of this first conference was strong motivation for a second conference, which was held in Lausanne and chaired by Majed Chergui. The third Femtochemistry Conference was held in Lund, Sweden, August 31 to September 4, 1997.

Since the birth of the femtochemistry field almost precisely 10 years ago, femtochemistry and femtobiology are now two rapidly expanding fields with a very strong development. At an increasing speed, new groups are starting up new activities and new problem areas of science are being addressed using rapidly developing methods of ultrafast spectroscopy. Information about elementary processes and phenomena of molecules ranging in size from diatomics to macromolecules like polymers and proteins may now be obtained. The dynamics of this wide spectrum of molecules are studied in isolated molecules, in clusters, in condensed phases, and at surfaces. In combination with atomic scale structural information and quantum chemistry calculations and molecular dynamics simulations, a very detailed picture can be obtained of the function of a molecular system. In other words, ultrafast spectroscopy has very rapidly grown and matured to become one of the cornerstones on which studies of the function of molecular system rely.

The third Femtochemistry Conference attracted just under 200 participants from 21 countries, and the 38 lectures and 98 posters covered a broad range of topics. The great number of very high quality posters reflected the high number of young scientists entering the field of ultrafast spectroscopy, a guarantee for a strong development of the field in the years to come. In addition to many excellent contributions in well-established areas like reaction dynamics and control, isolated molecules, clusters, surfaces, solvent dynamics, biological systems, coherence effects, etc. etc., a few particularly noteworthy developments may be mentioned. Recent developments of ultrafast X-ray and electron diffraction methods open the door for direct temporal resolution of structural changes in molecular systems. Ultrashort pulses are becoming even shorter: $\sim$4 fs pulses can now be generated with the help of Ti:Sa lasers. Coherent ultrashort X-ray pulses can now be generated, opening up many interesting new applications. The possibility that the high harmonics femtosecond pulses generated from high-intensity Ti:Sa pulses have an attosecond substructure constitute very exciting possibilities for studying electron dynamics in molecules and atoms, the day when one such attosecond pulse can be isolated.

Finally, I would like to thank Mrs. Heleen Hjalmarsson, Mrs. Marie Holmdahl-Svensson, and all members of my research group for all their help in organizing the meeting. Financial support for the meeting is gratefully acknowledged from the following foundations and companies: The Swedish Royal Academy of Sciences, the Swedish Natural Science Research Council, the Swedish Research Council for Engineering Sciences, Lund University, Wenner Gren Center Foundation, Spectra-Physics Lasers Inc., Permanova Lasersystem AB, BBT Svenska AB, Gamma Optronik, and Standa/Weland technics.

Villy Sundström
Guest Editor

S1089-5639(98)01169-4 CCC: $15.00
Published on Web 06/04/1998