

## Seminar on Excimer Lasers for Fundamental and Applied Physics Held in France

A two-day seminar on Excimer Lasers for Fundamental and Applied Physics was held at the University of Paris-Sud at Orsay, France, October 1986. Organized by Photon Science Instruments (PSI), the French representative of Lambda Physik, the seminar hosted 180 participants from fundamental research centers (Centre National de la Recherche Scientifique [CNRS], Commissariat à l'Energie Atomique [CEA], and university centers) and from industrial laboratories. A laser exhibition during the seminar gave the participants an opportunity to exchange information with PSI engineers on technical questions, especially those concerning new equipment proposed by Lambda Physik.

Dr. K. Pippert (Lamba Physik, Göttingen) delivered a key presentation on "Industrial Applications of Excimer Lasers." He emphasized that for about 10 years excimer lasers were used only in fundamental research for spectroscopy and physical chemistry, but today new technical and industrial procedures based on excimer laser radiation are being rapidly developed. In a short time, the average power of commercial pulsed excimer lasers of high repetition rate (1 kHz) has increased to 100 watts, and a further enhancement to 1 kW is expected in the next few years. He attributed the commercial success of certain excimer laser applications (e.g., laser isotope separation, laser-UV lithography, materials processing for microelectronics, and medicine) to their association with key industrial technologies. More than 1500 excimer lasers have been sold worldwide, with a projected annual market growth of about 30%, he noted.

The seminar's 18 lectures, listed below, focused on four main topics:

### 1. Molecular Photophysics

States Selective Angular and Kinetic Distributions of Photofragments. Application to NO<sub>2</sub> Photodissociation. M. Mons and I. Dimicoli (CEN, Saclay).

Van der Waals Charge Transfer of Molecular Complexes Formed in Supersonic Jets. M. Castella, F. Puizzi, and A. Tramer (CEN, Saclay).

High Resolution Molecular Spectroscopy. B. Bourguignon et al. (Photophysique Moléculaire, Orsay).

Resonant Multiphoton Ionization of Small Molecules in Gas Phase. Application to Rydberg State of NO. S. Fredin, D. Gauyacq, M. Horani, and G. Lefevre (Photophysique Moléculaire, Orsay).

### 2. Laser Spectroscopy

Laser Applications to Collisional Mechanisms Study in Atomic Physics. F. Roussel

(CEN, Saclay).

Spectroscopy and Collision Rotational Transfers in Diatomic Molecules. O. Nedelec (Spectroscopie-Physique, Grenoble).

Spectral and Temporal Compression of Pulses Delivered by KrF Excimer Laser. J.M. Chiquier, R. Buffa, L. Fini, and F. Pradere (Optique Quantique, Ecole Polytechnique, Palaiseau).

Kinetic Studies of Elementary Reaction of Atmospheric Interest in Discharge Flow Reactor Coupled with Laser Induced Fluorescence or in Laser Photolysis Cell. G. Laverdet (CRCCHT, Orleans).

### 3. Photochemistry

Production of an Intense Atom Beam by Laser Vaporization of a Solid Target in a Pulsed Supersonic Beam. Dynamics of the Reactions M + X (M = C or Al, X = NO, NO<sub>2</sub> or SO<sub>2</sub>) Studied in Crossed Beams. C. Naulin and M. Costes (Photophysique et Photochimie Moléculaire, Bordeaux).

Magnetic Field Effects in Photochemistry. J.C. Mialocq, M.H. Vidal, B. Hickel, and M. Arvis (CEN, Saclay).

Applications of Laser Flash Spectroscopy to Photochemical Conversion of Solar Energy. E. Amouyal (Physico-Chimie des Rayonnements, Orsay).

Photochemical Application of Exciplex Laser: Sensitized Generation and Reactivity of Singlet Oxygen Study. R. Gautron and P. Jardon (Photochimie, Grenoble).

### 4. Industrial Applications

Industrial and Scientific Prospective Analysis of Excimer Lasers. C. Fiori (Institut Battelle, Genève).

Photoablation and Modification of Polymer Surfaces with the Radiation of Excimer Laser. S. Lazare (Photophysique et Photochimie Moléculaire, Bordeaux).

Nonlinear Optical Properties in Semiconductors and Application to Optical Bistability. J.Y. Bigot, J.B. Grun, B. Honerlage, and R. Levy (Spectroscopie et Optique du Corps Solide, Strasbourg).

Thin Films Deposition of Hydrogenated Amorphous Silicon from UV Photolytic Dissociation of Silane and Disilane. E. Fogarassy (CRN, Strasbourg).

Plasma and UV Laser CVD. Application to the Deposition of Silicon Nitride Films. A. Catherinot and J. Aubretton (Ceramique Nouvelle, Limoges).

Excimer Laser Refractive Keratoplasty. J.C. Chastang and K. Hanna (IBM France et Hôpital Hotel Dieu, Paris).

E. FOGARASSY (CNRS)  
F. JOLLY (PSI)

## Workshop on Fundamentals and Applications of Ellipsometry

June 15-19, 1987

University of Nebraska, Lincoln, NE

**Lecturers:** N.M. Bashara, P.G. Snyder, M.C. Rost, and J.A. Woollam (workshop organizer), University of Nebraska, S.A. Alterovitz, NASA Lewis. The purpose is to provide fundamentals in ellipsometric theory and technology, and to apply ellipsometry to specific needs. It is tutorial, with a variety of example problems. The laboratory involves use of an automated, variable angle of incidence spectroscopic ellipsometer (VASE), as well as a laser-based null ellipsometer. In the laboratory a VAX 11/780 computer will be used for analyzing spectra. A Certificate of Graduation will be awarded, and students may receive 1 credit from the University of Nebraska.

**Cost:** \$575 if paid before June 1, and \$625 thereafter, including notes and class materials. (Students can enroll at the University, but will be charged for materials.) Dorm rooms at less than \$15 per night, and food for less than \$15 per day. Lincoln has numerous restaurants, motels, museums, swimming pools, tennis courts, and shopping centers.

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