

21.0 Molecular Physics

Academic and Research Staff

Prof. J.G. King, Prof. A.P. French

Visiting Scientists

Dr. A. Essig,¹ Dr. S. Rosenthal,¹ Dr. J.A. Jarrell²

21.1 Molecule Microscopy

F.L. Friedman Chair

National Institutes of Health (Grant Am 25535)

Whitaker Foundation

John G. King, Alvin Essig, Joseph A. Jarrell, Stanley R. Rosenthal

During 1987 we ceased work on this project as various contracts ran out. Whereas, much progress towards our goals has been made, the project was too ambitious and speculative to be carried out in this environment. We have abandoned the development of: 1) a one nanometer resolution desorption molecule microscope in which neutral molecules desorbed from the sample surface by a pulsed, focused electron beam are collected on a movable tungsten tip for later remote field desorption and ionization and detection with time of flight mass spectroscopy; 2) an instrument to observe with one micron resolution fluxes of hydrogen through various metallurgical samples under various conditions. This project was part of a larger study on hydrogen embrittlement and corrosion; and 3) an instrument in which a sharp tungsten tip in contact with a surface in UHV is later removed and atoms which plate out on the tip are counted and identified by field desorption and ionization, and time of flight mass spectroscopy.

We are expecting to continue work on the study of the binding of water to cholesterol and lecithin using the thermal desorption method originally developed for contrast studies in molecule microscopy. The results complement x-ray and differential calorimetry data.

¹ Boston University Medical School

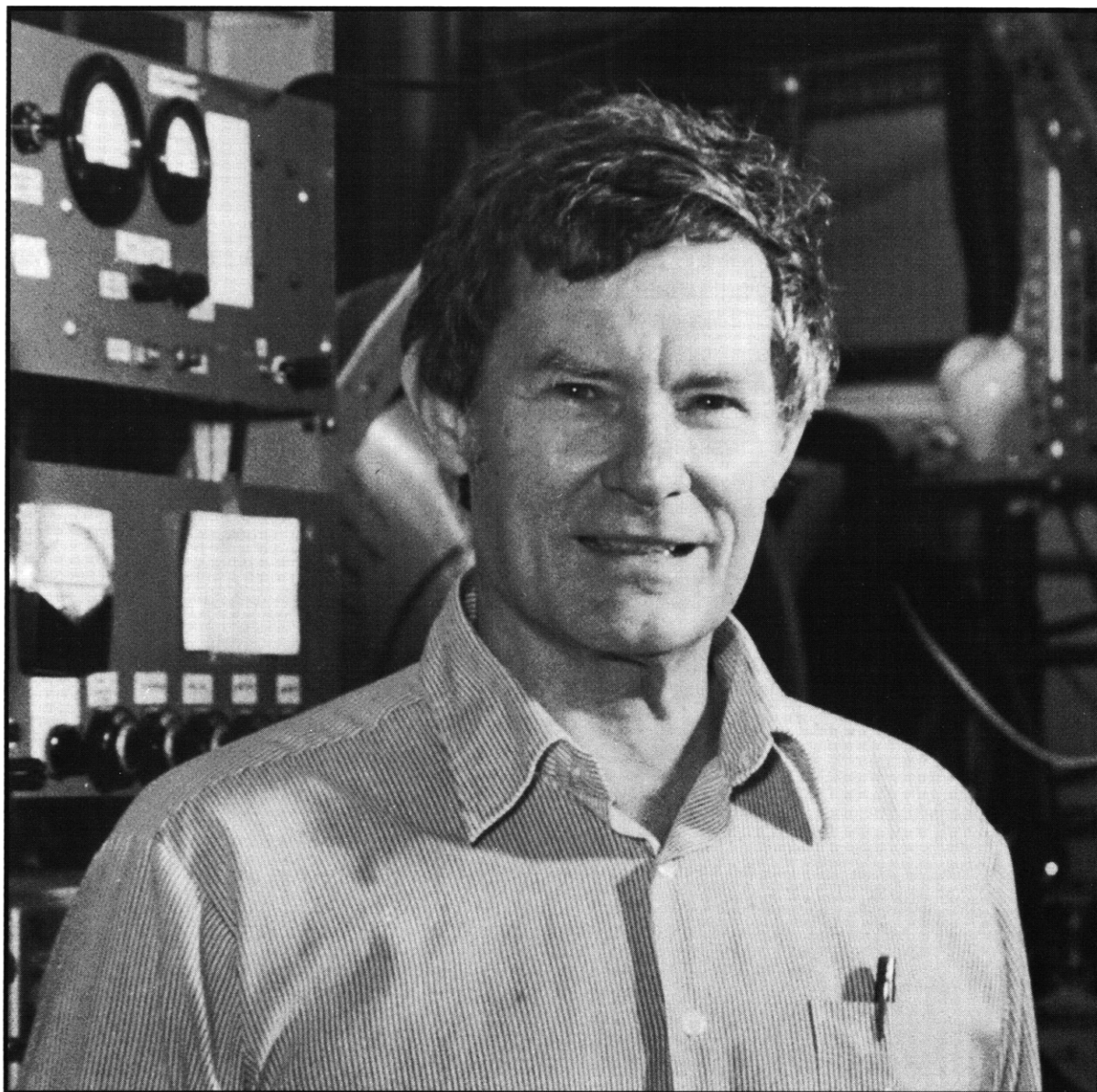
² Waters Corporation

21.2 Electrical Neutrality of Molecules

*F.L. Friedman Chair
International Business Machines, Inc.*

John G. King, Anthony P. French

We are continuing pilot experiments in preparation for applying for funds to carry out the acoustic-electric neutrality experiment described in RLE Progress Report No. 129.



Professor John G. King