reactive species. Nevertheless, a complete understanding of the structural parameters and nature of the charge carriers and their mobility is still lacking.

An increasing number of contributions—compared with the Kyoto meeting two years ago—dealt with the possibility of using polymers with conjugated backbones in semiconductor devices [*F. Garnier* (Lab. Photochimie Solaire, Thiais, France), *R. H. Friend* (Cavendish Laboratory, Cambridge, UK) and *H. Koezuda* (Mitsubishi Electric Corp., Japan)]. The idea of an all-plastic electronic device constructed from semiconducting polymers is challenging. In these presentations it was shown that such devices work in principle, but up to now either the charge carrier mobility and/or the long term stability of the device is not sufficient compared to conventional inorganic semiconductors.

Next to polymers, the synthesis, structure and theory of superconducting low molecular weight crystals were covered in many contributions. The most promising candidates as organic superconductors are various BEDT-TTF radical salts; the onset of superconductivity has been measured at about 10 K at ambient pressure! Although this temperature is not very high compared to the values of the new high-T_c ceramics, the steady increase in the transition temperature and the more detailed knowledge of the structure encourage further investigations of these new organic materials.

A variety of social events such as receptions and excursions to places of interest near Santa Fe provided a relaxing diversion from the intense scientific program (up to 13 hours per day). The large number of lectures and poster presentations made it difficult to attend contributions in different fields. The shortness of the lectures (15 or 25 minutes plus five minutes for discussion) led to the situation that in some cases the results of one research project were reported in different lectures and poster presentations. It would be better to restrict the number of oral contributions in order to keep track of the progress made in the different fields. For reasons of clarity a combination of longer plenary lectures and short communications would be preferred.

The contributions to the ICSM '88 will be published in "Synthetic Metals" before the end of this year. The next ICSM meeting will be held in 1990 in Tübingen (FRG) and will be organized by *M. Hanack* (Univ. Tübingen, FRG) and *S. Roth* (Max Planck Institute for Solid State Research, Stuttgart, FRG).

Jürgen Rühe and *Tiberio A. Ezquerra*
Max-Planck-Institut für Polymerforschung
Mainz (FRG)

Surface and Colloid Science

The 6th International Conference on Surface and Colloid Science (6-ICSCS) was held on June 5-10, 1988 in Hakone, Japan, organized by the Division of Colloid and Surface Chemistry of the Chemical Society of Japan. Surface and colloid science has made rapid progress in recent years, due to the development of completely new experimental techniques and the industrial needs arising from the introduction of advanced technologies. Studies of amphiphilic substances are being pursued alongside research on organized molecular assemblies in solutions and at interfaces. Rapid progress is being made in investigating solid surfaces using the experimental techniques of high-vacuum physics, leading to many new results related to catalysis and chemical and photochemical reactions at surfaces. Biosurfaces and biocolloids are important research topics in the context of the recent upsurge in biological science. The preparation of fine particles and of concentrated dispersions are important topics in relation both to new industrial applications and to pure research, e.g. the direct measurement of interparticle forces.

Nearly 800 participants from 25 countries throughout the world came together for the 6-ICSCS, and 530 papers and poster presentations made up the five sessions: 1) Organized Molecular Assemblies in Solution, 2) Organized Molecular Assemblies at Interfaces, 3) Solid Surfaces and Catalysis, 4) Biomembranes and Biocolloids, and 5) Fine particles and Dispersed Systems. In addition to exchanging information on fundamental aspects of surface and colloid science and their applications to advanced materials, participants were able to enjoy the beautiful scenery of Mt. Fuji.

Six plenary lectures were presented on the mornings of Monday and Wednesday. In the first of these, *E. Matijević* (Potsdam, NY, USA) discussed "Colloidal Science of Ceramic Powders", pointing out that the properties and processing of ceramic materials are strongly influenced by the nature of the powders from which they are made. With the help of many beautiful electron micrographs he showed that a large number of dispersions can now be obtained with uniform particles, ranging in size from several μm to several nm, in a variety of shapes including spheres, rods, ellipsoids, cubes, platelets, discs, etc.

K. Shinoda (Yokohama, Japan) lectured on "Conceptual Advances in Organized Solutions: a Milestone in the Physical Chemistry of Biological Organization", and described the ideal organized solution.

ADVANCED MATERIALS

J. M. Thomas (London, England) gave a lecture entitled "Colloidal Metals: Past, Present and Future", starting from the beautifully colored colloidal gold prepared by *Michael Faraday* in 1856, and incorporating some material from his Christmas Lecture last winter. He reviewed newly developed technologies that can be used to determine the structure of metal colloids, and presented a variety of new results on the structure of colloidal metals, alloys, oxides, etc., and their application to catalysts.

G. A. Somorjai (Berkeley, CA, USA) lectured on "The Molecular Surface Science of Organic Monolayers", focussing on studies of alkanes and arenes adsorbed on flat metal surfaces of low Miller index as models for catalyst surfaces. The studies employed a combination of new surface science techniques including surface crystallography by low energy electron diffraction (LEED), high resolution electron energy loss spectroscopy (HREELS), and scanning tunneling microscopy (STM), as well as second harmonic and sum frequency generation using non-linear laser optics, and scanning atomic force microscopy (AFM).

Other plenary lectures were on "Measurements and Relation between the Static and Dynamic Interaction between Surfaces Separated by Thin Liquid and Polymer Films", by *J. N. Israelachvili* (Santa Barbara, CA, USA) and "Forces between Colloidal Particles and Phase Equilibria", by *H. Wennerström* (Lund, Sweden).

42 invited lectures were also presented. Of these, eight were described as invited general lectures, presenting selected topics from the latest Japanese technology. They were "Mass Spectrometric Analysis of Gas Molecule Adsorption on Solids", by *T. Kurabayashi* et al. (Tohoku University, Sendai), "Advanced Conducting and Superconducting Organic Materials", by *H. Inokuchi* (Institute of Molecular Science, Okazaki), "Chemical and Physical Properties of Oxide Superconductors", by *K. Kitazawa* et al. (University of Tokyo), "Preparation of Monodisperse Particles of Precious Metals and their Applications for Electronics", by *Y. Zeniya* et al. (Tanaka Matthey K. K., Kanagawa), "Preparation of Stable Ultrafine Emulsions", by *H. Nakajima* (Shisheido Co., Yokohama), "New Applications of Polystyrene Sulfonate Dispersant for Coal-Water Mixture and other Uses", by *K. Ohbu* et al. (Lion Corp., Tokyo), "Properties and Applications of Amino-acid-based Surfactants", by *M. Takehara* (Ajinomoto Co., Kawasaki), and "Principles of Production and Stability Assurances of Liposomes", by *S. Hirota* et al. (Daiichi Seiyaku Co., Tokyo).

The success of the conference confirmed the importance of continuous exchange of information. The next international conference is to be held in France in 1991. In association with 6-ICSCS, five pre- and post-conference symposia were held in Japan. These were the Kyushu Symposium on Surfactant Solutions and Interfaces (June 2-3), the Tsukuba Pre-conference Congress on Dispersed Systems and Biocolloids (June 3-4), Fuji Post-conference Symposium on Current Problems and Possibilities for the Future of Organized Molecular Assemblies at Interfaces (June 10-12), Symposium on Solid Surface Phenomena (June 11), and International Symposium on Adsorption (June 13-15). They were also very successful.

Naoya Ogata
Department of Chemistry
Sophia University, Tokyo (Japan)