Authors

Brian S. Berry

Research Division, Yorktown Heights, New York

Dr. Berry is a research staff member in the physical sciences department and manager of the defects-in-solids group. His principal research interests lie in the application of mechanical relaxation techniques to the study of materials. Dr. Berry joined IBM in 1958, having previously held positions at the Fulmer Research Institute and Yale University. He received a B.S. degree with first-class honors from the University of Manchester, England, in 1949, and stayed on to teach and to obtain an M.S. in 1951 and a Ph.D. in 1954. He received the Cort Research Medal from the University the following year. He is a member of the American Physical Society and the American Institute of Mining and Metallurgical Engineers, and is coauthor (with A. S. Nowick) of the book *Anelastic Relaxation in Crystalline Solids.*

Josef Fischer

Ciba Geigy Corporation, Basel, Switzerland

Dr. Fischer was a World Trade Postdoctoral Fellow from Switzerland from June 1974 to June 1975, at the IBM Research Laboratory at San Jose, California, where he was involved in research using integrated optical techniques. He received his Ph.D. degree in 1974 at the Physical Chemistry Institute, University of Zurich, Switzerland. After completing his Fellowship he spent the better part of a year, again at the Physical Chemistry Institute, working on the spectroscopy of organic dye molecules before accepting his current position at Ciba Geigy in Basel, Switzerland.

Edward Gipstein

Research Division, San Jose, California

Mr. Gipstein is a research staff member in the polymer materials group. His work for several years has been in synthesis and characterization of organic and polymer materials for use as electron beam and x-ray lithographic resists. Prior to joining IBM in 1965, he was a senior research chemist in the Olin Mathieson Chemical Corporation. He received his B.S. in chemistry in 1949 from the University of Connecticut and his M.A. in chemistry in 1964 from St. Joseph College. Mr. Gipstein has received five IBM Outstanding Invention Awards over the past five years. He is a member of the American Chemical Society, the Electrochemical Society, and Sigma Xi.

Richard L. Greene

Research Division, San Jose, California

Dr. Greene is manager of a group investigating the electronic properties of anisotropic organic and inorganic materials. He is currently working on an understanding of the metallic conductivity observed in many of these materials. He joined IBM at the San Jose laboratory in 1970 where he started work on the photoconductivity of organic solids. He received a B.S. from the Massachusetts Institute of Technology and a Ph.D. in physics from Stanford University in 1967. Dr. Greene is a member of the American Physical Society.

Hiroyuki Hiraoka

Research Division, San Jose, California

Dr. Hiraoka is a research staff member of the physical sciences department. He joined IBM in 1966 and has done work in photochemistry and radiation chemistry. He received a B.S., an M.S., and a Ph.D. in chemistry from Kyoto University in 1954, 1956, and 1959. Between 1960 and 1964, he did postdoctoral studies in shock waves, photochromisms, and solution chemistry at the University of California at Los Angeles and Berkeley. Between 1964 and 1966 he was a staff member of Teijin Limited, Tokyo. He is a member of the American Chemical Society, the Chemical Society of Japan, and the Chemical Society of Great Britain. He is a 1976 recipient of the IBM Outstanding Contribution and the Invention Achievement Awards for his mechanistic studies of electron-beam resist and photochemical materials, respectively.

Duane E. Johnson

Deceased

Dr. Johnson was a research staff member in the organic and polymer materials department at the San Jose research laboratory. He worked on electron beam sensitive materials and the mechanisms of decomposition in photoresists. Until 1967 he was employed at the Aerojet-General Corporation where he synthesized polymeric binders for solid rocket propellants. He received a B.S. from Iowa State University in 1951 and a Ph.D. from the University of California at Los Angeles in 1956, all degrees in chemistry. He was a member of the American Chemical Society, Phi Lambda Upsilon, Pi Mu Epsilon, Phi Kappa Phi, and Sigma Xi. Dr. Johnson died in December, 1976.

James R. Lyerla, Jr.

Research Division, San Jose, California

Dr. Lyerla is a research staff member in the organic and polymer materials group. He is currently involved in basic research in the application of nuclear magnetic resonance spectroscopy to the study of polymer structure and polymer chain dynamics.

In addition, he serves as technical coordinator for the department in the area of design, characterization, and development of lithographic resist materials. Dr. Lyerla joined IBM at the San Jose laboratory in 1975 after completing a National Research Council/National Academy of Sciences Research Associateship at the National Bureau of Standards. He received a B.A. in chemistry in 1966 from Southern Illinois University and a Ph.D. in physical chemistry in 1971 from the University of Utah. Dr. Lyerla is a member of the American Chemical Society and the American Physical Society.

Omar U. Need, III

Research Division, San Jose, California

Mr. Need is a senior laboratory specialist in the department of organic and polymeric materials. His current work is in the synthesis and evaluation of new polymeric resist materials for electron beam and x-ray lithography applications. Upon completion of five years' military service with the U.S. Coast Guard, he joined IBM in 1963 as a laboratory trainee in the area of polymer characterization. From 1964 to 1971, at which time his present work began, he was involved in the synthesis of organic and polymeric materials for use in electrophotographic processes. In 1974 and 1975 he was awarded his first and second IBM Invention Achievement Awards.

Augustus C. Ouano

Research Division, San Jose, California

Dr. Ouano joined IBM at the San Jose laboratory as a staff member in 1970. His current research interests are on the thermodynamic and transport properties of polymer solutions, the measurement of the molecular weight distribution and molecular weight averages of polymers, and the dynamics of polymer dissolution. Dr. Ouano received his B.S.Ch.E. from Mapua' Institute of Technology, Manila, Philippines in 1957, his M.S.Ch.E. from Purdue University in 1961, and his Ph.D. from Stevens Institute of Technology in 1969. He has also worked at Continental Can Company, Dart Industries, Packaging Corporation of America, and General Electric Company, and has taught at Mapua' Institute of Technology, DePaul University, and Stevens Institute of Technology. He is a member of the American Chemical Society and the Society of Rheology.

Randolph Santo

Research Division, San Jose, California

Mr. Santo is a senior laboratory technician in the organic solids group of the physical sciences department and is currently working in the areas of integrated optics, laser spectroscopy, and surface plasmons. He joined the research laboratory in 1974, after receiving his B.S. in physics from the University of Santa Clara, California.

Thor L. Smith

Research Division, San Jose, California

Dr. Smith is a research staff member whose current activities include studies of the permeability of polymer films, the electrical birefringence of suspensions of single crystals of polymers, and the mechanical properties of polymers. Between 1954 and 1959 he was affiliated with the Jet Propulsion Laboratory of California Institute of Technology and later with Stanford Research Institute. He joined IBM in 1969. Dr. Smith received a Ph.D. in physical chemistry from the University of Wisconsin in 1948, is a past president of the Society of Rheology, a member of the American Chemical Society, and a Fellow of the American Physical Society.

G. Bryan Street

Research Division, San Jose, California

Dr. Street is a research staff member of the electronic phenomena group. He is currently interested in the chemistry of electrically conducting materials. He received his B.S. in chemistry in 1959 and his Ph.D. in applied science in 1962 from the University of Leeds, England. He spent two years as a Research Associate in chemistry at the University of Southern California before joining IBM at San Jose in 1964. Since that time he has also worked on photoconducting and magnetic materials. In 1972, Dr. Street received both IBM's Outstanding Invention Award, for his discovery of manganese gallium germanide, and his first IBM Invention Achievement Award. He is the recipient of an IBM Outstanding Contribution Award, received in 1975, for his work on $(SN)_x$.

John R. Susko

System Products Division, Endicott, New York

Mr. Susko is a senior associate engineer in the environment development group. His current interest is in polymer materials development, and primarily in the characterization of gas/vapor diffusion. He received his A.AS. degree in chemistry in 1967 from Broome Community College, Binghamton, New York, and his B.S., also in chemistry, from Elmira College, New York in 1969. Mr. Susko is a member of the American Chemical Society and the Society of Plastics Engineers.

Jerome D. Swalen

Research Division, San Jose, California

Dr. Swalen is a staff member in the organic solids department doing research on the optical properties of monolayers in thin films and on surfaces by integrated optical techniques. He joined IBM in 1962 and has been manager of the physics department from 1966 to 1972. From 1972 to 1973 he was a Visiting Professor at the University of Zurich and a Visiting Scientist at the Max Planck Institute, Gottingen, Germany. His degrees

are a B.S. in chemistry obtained at the University of Minnesota and an M.A. in physics and a Ph.D. in chemical physics from Harvard University. He spent a postdoctoral year at the National Research Council, Ottawa, Canada. He is a Fellow of the American Physical Society, a Fellow of the American Association for the Advancement of Science, and a member of the American Chemical Society.

Maurus Tacke

University of Würzburg, West Germany

Dr. Tacke was a World Trade Postdoctoral Fellow from Germany from June 1975 to June 1976, at the IBM Research Laboratory at San Jose, California, where he was involved in research using integrated optical techniques. He received his Diplom-Physiker in 1972 at the Freiburg University. His Ph.D. thesis was completed in early 1975 at the Max Planck Institut für Festkörperforschung in Stuttgart, West Germany. After completing his Postdoctoral Fellowship, he returned to Germany for a faculty position at the University of Würzburg where he is doing research in infrared physics.

Yih-O Tu

Research Division, San Jose, California

Dr. Tu is a member of the dynamic system modeling group. He received an M.S. in 1954 in mechanical engineering from Carnegie Institute of Technology and a Ph.D. in 1959 in mathematics from Rensselaer Polytechnic Institute. He joined IBM in 1959 in the mathematical sciences department at the Thomas J. Watson Research Center in Yorktown Heights, New York, where his interests included continuum mechanics and its application in engineering analysis. In 1972 he transferred to the San Jose laboratory where he is working in mathematical modeling of electromechanical and physicochemical devices. Dr. Tu is a member of the American Mathematical Society, the American Physical Society, the American Society of Mechanical Engineers, the Society of Engineering Sciences, and the Society of Industrial and Applied Mathematics.

Basil D. Washo

System Products Division, Poughkeepsie, New York

Dr. Washo is an advisory engineer in the materials and process technology laboratory. He received his B.S. in chemical engineering in 1962 at the Pennsylvania State University and his Ph.D. in polymer science/chemical engineering in 1968 at Rensselaer Polytechnic Institute. Dr. Washo joined IBM in 1968 at the Poughkeepsie development laboratory and has since been engaged in organic coating material and process development, including electrophoretic polymer deposition, plasma vapor deposition, and the spin coating process. He is a member of the American Chemical Society, the American Institute of Chemical Engineering, the Society of Plastics Engineers, Sigma Xi, and Tau Beta Pi.

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