Authors

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Dr. Davidse is the manager of thin film process development at the East Fishkill laboratory. He received the B.S. in Chemistry, 1955; M.S. in Chemical Engineering, 1956; and Ph.D. in Physical Chemistry, 1959, all at Delft Technological University. He was a staff member at Delft Technological University from 1955 to 1959 and has also worked at the Philco Scientific Laboratory in Blue Bell, Pennsylvania. In 1963 he joined the IBM Components Division in Poughkeepsie, where he worked on rf sputtering techniques. He is a member of the American Vacuum Society.

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Mr. Drangeid is the manager of the Device group and the Semiconductor Technology group at the Zürich Research Laboratory. He received his M.S. degree from the Swiss Federal Institute of Technology in 1951. Before joining IBM in 1956, he worked four years at Brown Boveri, Switzerland. After joining the IBM Zürich laboratory he was first involved in research in thin magnetic films and superconductivity, and later managed the group which developed the 12-GHz Schottky-barrier field-effect transistor. He is a member of the IEEE, ACM, Schweiz. Elektrotechn. Verein (SEV), Swiss Physical Society and Zürich Physical Society.

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Mr. Kennedy is a Senior Physicist at the laboratory in East Fishkill, where he manages a group doing mathematical analysis in semiconductor device theory. He has been with IBM since 1958, when he joined the Poughkeepsie laboratory as an Advisory Physicist to do mathematical analysis of boundary value problems related to the development of semiconductor devices. From 1940 to 1942 he was at the MIT Radiation Laboratory working on the design of radar equipment, and from 1942 to 1958 he was employed by the Raytheon Manufacturing Co. to work on the design of microwave tubes, microwave communication systems, and semiconductor devices. Also during the period 1953 to 1958 he was an Instructor in the Graduate School of Engineering at Northeastern University. He is a member of the American Physical Society.

Robert W. Keyes

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Dr. Keyes is the manager of the Exploratory Devices group at the Research Center. He received his M.S. and Ph.D. in Physics, 1950 and 1953, at the University of Chicago. From 1946 to 1950 he worked at the Argonne National Laboratory, and from 1953 to 1960 at the Westinghouse Research Laboratory. He joined IBM Research in 1960. He is a Senior Member, IEEE and a Fellow, American Physical Society.

Harold R. Koenig

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Mr. Koenig has been engaged since 1967 in work on the fundamentals of sputtered deposition of thin film insulators. He received the M.S. in Mechanical Engineering from the University of Illinois in 1949 and taught at MIT from 1949 to 1950. In 1950 he joined the General Electric Company to work on the development of missile guidance systems. He was assigned by General Electric to Project Matterhorn, Princeton University, from 1954 to 1957, where he contributed to the development of devices for confining high temperature plasma for nuclear fusion experiments. Later, he contributed to developments in ICBM defense systems, lasers and other areas of plasma physics.

Rolf Landauer

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Dr. Landauer was named an IBM Fellow in 1969. This appointment permits him to pursue projects of his own choice in his field of solid state theory with emphasis on its relationship to the computation process. His educational background includes an A.M. in Electronic Physics, 1945; S.M. in Physics, 1947; and Ph.D. in Physics, 1950, all from Harvard. He was an Electronic Technician's Mate 3/c, U.S.N.R., 1945–1946, and worked at the Lewis Laboratory, National Advisory Committee for Aeronautics, 1950–1952. Since then he has held a variety of research and managerial positions in IBM Research, including Director of Physical Sciences and Assistant Director of Research.

Joseph S. Logan

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Dr. Logan is the manager of an insulator processes department at the East Fishkill laboratory. He received the B.E.E. and M.S. degrees from Cornell University in 1955 and 1956, respectively, and the Ph.D. degree from Stanford University in 1961. He joined IBM in 1960 and worked for two years on tunnel diode development and for three years on silicon surface passivation research. For the past three years he has been engaged in the development of rf sputtering processes for insulators. He is a member of Eta Kappa Nu, Tau Beta Pi, Sigma Xi, RESA and IEEE.

Fred S. Maddocks

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Mr. Maddocks is the manager of a group with responsibility for developing insulator films for logic products at the East Fishkill laboratory. He received the B.S. in Chemistry from Northeastern University in 1952. He joined the IBM Federal Systems Division in 1958 to work on thin ferromagnetic film memory devices. He received the IBM Invention Achievement Award in 1968 for work on thin films.

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Dr. Maissel is currently responsible for basic thin film studies in the laboratory at East Fishkill. He received the B.Sc. in Physics and Chemistry in 1949 and the M.Sc. in Physics in 1950 from the University of Capetown, South Africa; and the Ph.D. in Physics in 1955 from the Imperial College, London. He joined the Philco Corporation in Philadelphia in 1956, where he worked on metal-semiconductor contacts. He came to IBM in 1960.

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Mr. Mazza is now on educational leave of absence from IBM for work toward the M.D. degree at New York Medical College. He received the B.E.E. from Rensselaer Polytechnic Institute in 1962 and the M.S.E.E. from Syracuse University in 1966. He joined IBM in 1962 to design test equipment for SLT components; from 1964 to 1968 he worked on the development of rf insulator sputtering processes. He is a member of RESA.

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Dr. Middelhoek is a Professor of Electrical Engineering and Head of the Electrical Materials Laboratory at Delft. He received his M.S. in Physical Engineering in 1956 from Delft University of Technology, and his Ph.D. in Mathematics and Physics in 1961 from Amsterdam University. He worked at the IBM Zürich Research Laboratory in Rüschlikon, Switzerland from 1956 to 1969, was first engaged in thin magnetic film research and later involved in developing the technology of a 12-GHz Schottky-barrier field-effect transistor. He is a member of the Dutch Physical Society, the Royal Institute of Engineers and the German Study Group on Ferromagnetism.

Theodor O. Mohr
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Dr. Mohr joined IBM in 1961 as a physicist in the Zürich Research Laboratory where he is now the acting manager of the device technology group. His present field of interest is fast, active devices. He received a Diploma in Physics in 1950 and a Dr. rer. nat. in 1952, both at the M. Luther University, Halle, Germany. He was also a Research Assistant in the Physics Department of the University from 1950 to 1954; worked as a physicist in the Research and Development Laboratories of the Werk für Bauelemente der Nachrichtentechnik Teltor-Berlin, Germany, 1954 to 1958; and was at the Intermetall Company, Freiburg-Breisgau, Germany, 1958 to 1961.

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Dr. O'Brien has been with IBM since 1960 working on the theoretical analysis of semiconductor devices and the computational problems associated with this analysis. He received his B.S. in 1953, his M.S. in 1954, and his Ph.D. in 1957, all in mathematics from MIT. In 1958 he joined Sylvania Electric as a member of an operations research and mathematical analysis department where he worked on problems in communication and detection in noisy environments. He is a member of Sigma Xi, the American Mathematical Society, the Mathematical Association of America, and the American Statistical Association.

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Dr. Sommerhalder has been a staff member at the Zürich Laboratory since 1959, where he has been engaged in solid state physics and device studies. He received a Diploma in 1954 and a Ph.D. in Physics in 1960 from the Eidgenössische Technische Hochschule. He is a member of the Swiss and American Physical Societies.

Charles L. Standley
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Mr. Standley is the manager of a product assurance group at the East Fishkill laboratory; the group's mission is to evaluate the reliability of insulation and interconnections on new integrated-surface products. He received the M.S. in Chemical Physics from the University of Arkansas in 1959 and joined the IBM Components Division at Poughkeepsie in 1961 to work on sputtered metal films and thin-film passive components.

Peter Wolf
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Dr. Wolf is the manager of a new devices group at the Zürich Laboratory. He has a B.S. in Physics, 1953, from the University of Karlsruhe; a Diploma in Physics, 1958, from the University of Darmstadt; and a Ph.D. in Physics, 1963, from the University of Mainz. He joined the IBM Zürich Laboratory in 1959. He has worked on the dynamic behavior of thin magnetic films, on the dynamics of spin structures in rare-earth metals and, since 1966, on investigations of the microwave properties of Schottky-barrier field-effect transistors. He is a member of the German Physical Society.