

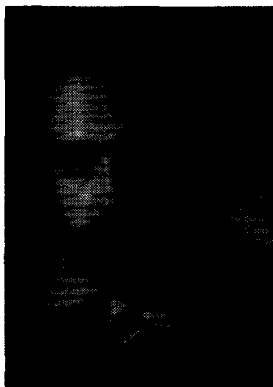
Foreword

THIS SPECIAL ISSUE of the IEEE TRANSACTIONS ON ELECTRON DEVICES is devoted to the field of Infrared. The Special Issue is divided into three parts. The first part contains papers specifically dealing with material properties and measurement techniques of IR-sensitive materials. The papers included are representative of the recent interest in extrinsic silicon and (Hg, Cd)Te. Among the subjects discussed are the use of neutron transmutation for producing precisely compensated Si: In detector material (Braggins *et al.*) and the growth of (Hg, Cd)Te layers by liquid-phase epitaxy from various solutions (Bowers *et al.*).

The second part of the Special Issue covers devices used for the detection of IR radiation. Device operation and characteristics of a variety of IR detectors are discussed, ranging from homojunction and heterojunction photodiodes to Schottky-barrier detectors and from an atomic vapor quantum counter to superconductive detectors. The last section of the issue

contains papers discussing IR detector arrays and their integration with self-scanned signal readout. The application of the charge transfer concept and related devices to readout integration, the so-called IRCCD, appears to be universally accepted as the basic approach to a new generation of focal-plane arrays. Specific IRCCD approaches reported in this section included (Hg, Cd)Te monolithic CCD and CID arrays (Chapman *et al.*), (Hg, Cd)Te hybrid IRCCD (Takigawa *et al.*), InSb monolithic CCD (Thom *et al.*), and CID (Wei *et al.*), hybrid (Pb, Sn)Te IRCCD (Felix *et al.*). It is apparent that both monolithic and hybrid IRCCD approaches are both being vigorously pursued. It is interesting to observe, for the benefit of scientific development, that only a few years ago this area of IR research did not exist and the very concept was considered controversial.

ANDREW J. STECKL
Guest Editor



Andrew J. Steckl (S'70-M'73-SM'79) received the B.S.E. degree in electrical engineering from Princeton University, Princeton, NJ, in 1968, and the M.Sc. and Ph.D. degrees from the University of Rochester, Rochester, NY, in 1970 and 1973, respectively. At the University of Rochester, he held a General Telephone and Telegraph Foundation Fellowship (1969-1970) and a New York State Science and Foundation Fellowship (1971-1972).

In 1972, he joined the Honeywell Radiation Center, Lexington, MA, as a Senior Research Engineer, where he worked on new concepts and devices in the area of infrared detection. In 1973, he joined the Technical Staff of the Electronics Research Division of Rockwell International, Anaheim, CA. At Rockwell he was primarily involved in research on charge-coupled devices. In 1976, he joined the Electrical and Systems Engineering Department of Rensselaer Polytechnic Institute, Troy, NY, as an Associate Professor. At Rensselaer he developed the Integrated Circuits Laboratory and is involved with research on IC's, narrow bandgap semiconductors, and IR detectors. In the summer of 1977 he was a Faculty Fellow at IBM York-

town Heights. He has published and presented a number of papers on CCD's and other IC's and infrared detectors. He is the author of an invited paper on IR sensitive CCD's and of a chapter on CCD's in the 2nd edition of the *Infrared Master Handbook*.

Dr. Steckl has served as member of the Technical Program Committee of IEDM and CICC.