

Foreword

THE 1989 IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium took place on June 12 and 13, 1989, in Long Beach, CA. As in previous years, this meeting was held in conjunction with the IEEE MTT-S International Microwave Symposium. This year our program comprised one invited paper, entitled "Progress of MMICs in Japan," 32 contributed papers, and three panel discussions. The contributed papers were organized into eight sessions, which were devoted to low-noise amplifiers; power amplifiers; nonlinear circuits; advanced circuits and applications; control circuits; receivers and mixers; millimeter-wave amplifiers; and broad-band integrated circuits.

Interest in the technical program was evidenced by the large attendance—1051 participants—at the Symposium. This figure exceeded the previous record of 950 in 1987. Records of the invited and contributed papers are published in the *Digest of Papers — IEEE 1989 Microwave and Millimeter-Wave Monolithic Circuits Symposium* (IEEE Catalog No. 89CH2761-5, available from the IEEE Service

Center, 445 Hoes Lane, Piscataway, NJ 08855-1331). Articles in the *Digest* reflect the tight time constraints imposed on the presentations. To overcome this limitation, the present Symposium Issue provided authors with the opportunity to expand the content of their work beyond what was reported at the meeting and in the *Digest*. We are pleased to offer in this 1989 Symposium Issue six full-length papers and four short papers on microwave and millimeter-wave monolithic circuit technology.

The 1989 Symposium Issue was made possible by the contributions of the authors and by the dedicated work of the reviewers and the TRANSACTIONS Chairman, Vladimir Sokolov. I would also like to take this opportunity to acknowledge the contributions of the Technical and Steering Committee members and the leadership of our General Chairman, Reynold S. Kagiwada.

ALEJANDRO CHU
Technical Program Chairman



Alejandro Chu received the B.Sc. (1970), M.Sc., and electrical engineer (1972) degrees from the Massachusetts Institute of Technology, Cambridge, MA. He then received the Ph.D. degree from Stanford University, Stanford, CA, in 1977. In 1987 he graduated from the Program for Management Development at Harvard University, Graduate School of Business Administration, Boston, MA.

From 1972 to 1978, he was with the Hewlett-Packard Company, working on the development of a wide-band 18 GHz sweeper and microwave components, GaAs FET's, and GaAs integrated circuits. From 1978 to 1984 he was a member of the technical staff at Lincoln Laboratory, MIT, Lexington, MA, where he was responsible for the development of GaAs devices and monolithic circuits for millimeter-wave transceivers. In 1984 he joined M/A-COM, Inc., Burlington, MA, to work on the transfer of GaAs monolithic circuit technology to manufacturing. He is presently Director of the Technology Center in the Subsystem Group.