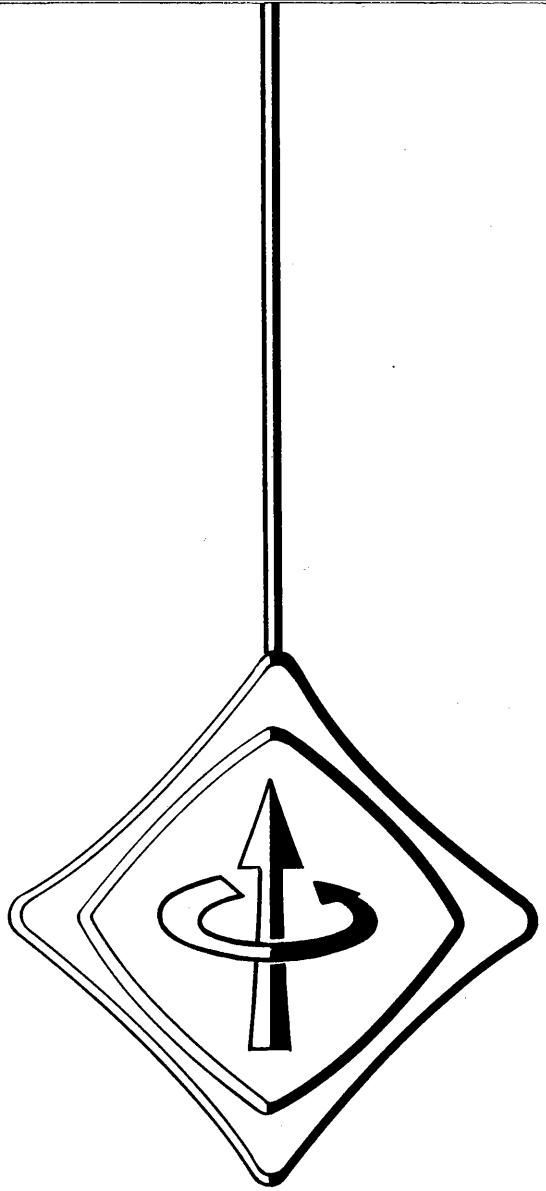

17th annual proceedings

reliability physics 1979

San Francisco, California, April 24–26, 1979

Sponsored by
the IEEE Electron Devices Society and
the IEEE Reliability Society

IEEE Catalog No. 79CH1425-8PHY
Library of Congress Catalog Card No. 79-87999

1979 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

SYMPOSIUM OFFICERS

GENERAL CHAIRMAN ..... F. B. Micheletti, *Rockwell International*
VICE GENERAL CHAIRMAN ..... G. T. Cheney, *Bell Laboratories*
SECRETARY ..... C. E. Ehrenfried, *IITRI (RAC)*
FINANCE ..... C. R. Murphy, *Rockwell International*

SYMPOSIUM COMMITTEE CHAIRMEN

TECHNICAL PROGRAM ..... J. R. Edwards, AMI
PUBLICITY ..... P. E. Kennedy, *Hughes Aircraft*
REGISTRATION ..... C. S. Symeon, *Harris Semiconductor*
ARRANGEMENTS ..... G. H. Ebel, *Singer*
PUBLICATIONS ..... R. C. Walker, *IITRI (RAC)*

BOARD OF DIRECTORS

J. H. Martin, Chairman
Draper Laboratory

D. F. Barber, Reliability Society
USAF (RADC)

H. C. Jones, Reliability Society
Westinghouse Electric

H. E. Nigh, Electron Device Society
Bell Laboratories

O. D. Trapp, Electron Device Society
Technology Associates

F. B. Micheletti, '79 General Chairman
Rockwell International

Published By The
ELECTRON DEVICES SOCIETY AND RELIABILITY SOCIETY
of the
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM AWARD

The International Reliability Physics Symposium Award for Outstanding Contributions in the Field of Reliability Physics was first authorized in 1971 by the Symposium Board of Directors. This award, which is not necessarily given annually, is presented to individuals who have made major significant contributions to the advancement of the field of reliability

The 1979 award was presented to D. Stewart Peck of the Bell Telephone Laboratories, Allentown, Pennsylvania, in recognition of his numerous contributions to the field of Reliability Physics. He was an early proponent of log-normal life distributions for semiconductor devices and a missionary for accelerated testing. These techniques are used by companies throughout the world and have become very important tools for quality control, for rapid evaluation of process changes, and for predicting the useful life of new products. His papers and tutorials given at the symposium have been models of technical excellence and clarity. His work on temperature-humidity acceleration of metal electrolysis failure in semiconductor devices is particularly notable. Mr. Peck has also given years of dedicated service to the symposium as a member of the Management Committee, as a member of the Board of Directors and as General Chairman of the symposium.

INTERNATIONAL RELIABILITY PHYSICS AWARD PRESENTATION
D. Steward Peck, award recipient (left)
Jacob H. Martin, Chairman, Board of Directors (right)

TABLE OF CONTENTS

LSI FAILURE MODES
Session Chairman: Murray H. Woods

PACKAGING AND ASSEMBLY
Session Chairman: Owen D. Layden

METALLIZATION AND PHOTOVOLTAIC RELIABILITY
Session Chairman: John W. Peeples

MOISTURE AND RELIABILITY
Session Chairman: Robert W. Thomas

III–V COMPOUND DEVICES
Session Chairman: David Burgess

ANALYTICAL TECHNIQUES
Session Chairman: Carl Green

LSI DEVICE TECHNOLOGY AND RELIABILITY
Session Chairman: Dinesh Mehta