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Preface

This volume contains papers presented at the symposium on Amorphous Silicon Technology which was held at the 1993 MRS Spring Meeting in San Francisco, California. This symposium, which is a continuation of successful symposia held at previous MRS Spring meetings, focused on materials issues relating to the device applications which employ amorphous silicon and related alloys.

These proceedings contain papers on film growth, structure, electronic and optical properties, defects, interfaces and contacts, heterostructures, and stability and nonequilibrium behavior. The applications represented in this volume include the more traditional applications such as solar cells and thin film transistors as well as several diverse applications such as image sensors, detectors, spatial light modulators and electroluminescent devices. The volume is organized into distinct sections covering growth and modification, structure and defects, opto-electronic properties, stability, alloys and multilayers, solar cells, thin film transistors, image sensors and novel devices, and miscellaneous topics.

The most important technological development of the past few years has been the commercialization of thin film transistors (TFT's) based on a-Si:H and related alloys for display applications. Before the widespread development of TFT's the commercial applications of a-Si:H were largely devoted to solar cells whose deployment is being hampered by the instability phenomena and its basic understanding remains elusive. Hence a significant number of papers deal with this topic as well as the basic understanding of the material. The alloys of SiGe, SiC and SiN are not only better understood but have resulted in the synthesis of better materials; for instance, inclusion of SiN into a device structure has resulted in a weak blue electroluminescent signal.

On behalf of the symposium participants, the organizing committee thanks the sponsors who provided financial assistance: The Electrical Power Institute, ElettroRava SpA (Italy), ENEA (Italy), Xerox Corporation, KFA (Germany), Solarex Corp., Advanced Photovoltaic Systems, and USSC. The program committee members were E.A. Schiff, J.R. Abelson, V. Dalal, H. Okamoto and M.J. Powell. Special thanks are due to Mary Ann Woolf and Craig Taylor of the University of Utah for all the assistance that they provided.

Lastly, Peter G. LeComber, one of the organizers of this symposium, as well as several previous symposia, unfortunately died a few months ago. It is appropriate to remember that Peter performed pioneering work in this field at the University of Dundee, Scotland. His immense contributions over the last two decades or so have resulted in the field mushrooming into a significant industry. As a friend and talented scientist, words cannot totally express this tragic loss. This volume is dedicated to the memory of Peter G. LeComber.

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June 1993