

# Topics in Applied Physics Volume 55



# Topics in Applied Physics

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  - 56 **The Physics of Hydrogenated Amorphous Silicon II** Electronic and Vibrational Properties Editors: J. D. Joannopoulos and G. Lucovsky
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# The Physics of Hydrogenated Amorphous Silicon I

Structure, Preparation, and Devices

Edited by J.D. Joannopoulos and G. Lucovsky

With Contributions by D. E. Carlson

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With 209 Figures

Springer-Verlag

Berlin Heidelberg New York Tokyo 1984

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ISBN 3-540-12807-7 Springer-Verlag Berlin Heidelberg New York Tokyo  
ISBN 0-387-12807-7 Springer-Verlag New York Heidelberg Berlin Tokyo

Library of Congress Cataloging in Publication Data. Main entry under title: The Physics of hydrogenated amorphous silicon. (Topics in applied physics; v. 55–56) Contents: I. Structure, preparation, and devices – 2. Electronic and vibrational properties. 1. Silicon. I. Joannopoulos, J. D. (John D.), 1947–. II. Lucovsky, G. III. Series. QC611.8.S5P49 1983 537.6'22 83-16732

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Printed in Germany

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Typesetting: Schwetzingen Verlagsdruckerei, Schwetzingen  
Offset printing and bookbinding: Brühlsche Universitätsdruckerei, Giessen  
2153/3130-543210

## Preface

During the past several years there has grown an enormous experimental and theoretical activity associated with amorphous silicon and its alloys. This is based on the exciting possibilities emerging from the doping of hydrogenated amorphous silicon. Experimental and theoretical efforts have been directed at obtaining an understanding of the underlying physics of a variety of interesting and unusual phenomena associated with this material. In addition, major effort has also been expended towards the exploration of the technological consequences of these phenomena. This two part series presents a broad, as well as in-depth, overview of the entire field of amorphous silicon and its alloys. At the present, sufficient progress and understanding exist that such volumes should be useful and timely. Briefly, the present Volume I concentrates on structure, preparation techniques, and device applications. Volume II concentrates on theoretical and experimental investigations of a variety of electronic and vibrational phenomena. Each chapter is written as a critical review with a conscious effort to separate fact and interpretation. In addition, the contributions represent constructive reviews that help define future directions of research whenever possible. The chapters are written at the level of a graduate student which should be helpful to both students and scientists who are not experts in this area. Finally, in an attempt to add an archival flavor to the reviews, many representative results and comprehensive lists of citations are presented.

Cambridge, Raleigh  
December 1983

J. D. Joannopoulos · G. Lucovsky

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