ELECTRON MICROFRACTOGRAPHY

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ELECTRON MICROFRACTOGRAPHY

A symposium presented at the Seventy-first Annual Meeting AMERICAN SOCIETY FOR TESTING AND MATERIALS San Francisco, Calif., 23-28 June, 1968

ASTM SPECIAL TECHNICAL PUBLICATION 453

List price \$16.00



AMERICAN SOCIETY FOR TESTING AND MATERIALS 1916 Race Street, Philadelphia, Pa. 19103

© by American Society for Testing and Materials 1969 Library of Congress Catalog Card Number: 76-78439 SBN 8031-0013-2

NOTE

The Society is not responsible, as a body, for the statements and opinions advanced in this publication.

> Printed in Baltimore, Md. October 1969

Foreword

The Symposium on Electron Microfractography was presented during the Seventy-first Annual Meeting of the Society, in San Francisco, Calif., 23-28 June 1968. The symposium was sponsored by Subcommittee II on Fractography of ASTM Committee E-24 on Fracture Testing of Metals. The chairman of this symposium was A.J. Brothers, General Electric Co.

Related ASTM Publications

Advances in Electron Metallography, STP 396 (1966), \$7.00

Fifty Years of Progress in Metallographic Techniques, STP 430 (1968), \$25.75

Contents

Introduction
Relationship Between Precipitation and Dimple Fracture in an
18 Percent Nickel Maraging Steel-L. Roesch and
G. Henry
Discussion
Fractographic Studies on the Cleavage Fracture of Single
Crystals of Iron-K. Kitajima and K. Futagami
Fractographic Studies of Crack-Tip Zones in a Structural
Steel-D. M. Fegredo
Correlations Between Fractographic Features and Plane-Strain
Fracture Toughness in an Ultrahigh-Strength Steel-
W. A. Spitzig
A Comparison of Elevated Temperature Tensile Fractures in
Nonleaded and Leaded 4145 Steel-R. D. Zipp,
W. R. Warke, and N. N. Breyer
Use of Electron Microfractography in Interpreting the
Mechanisms of Fatigue Crack Propagation-K. D. Nair
and I. Le May
Fracture Surface and Processes in Polycarbonate-G. H. Jacoby 147
A Fractographic Study of Precipitation Hardened and Dispersion
Strengthened Magnesium-Base Alloys-C. D. Calhoun and
N. S. Stoloff
Discussion
Correlation of Fractographic Features With Fracture Mechanics
Data-R. C. Bates, W. G. Clark, Jr., and D. M. Moon 192
The Influence of Microstructure on the Fracture Topography of
Titanium Alloys-J. C. Williams, R. R. Boyer, and
M. J. Blackburn