Advances in Electron Metallography

ASTP 396

ADVANCES IN ELECTRON METALLOGRAPHY, VOL. 6

A symposium
presented at the
Sixty-eighth Annual Meeting
AMERICAN SOCIETY FOR
TESTING AND MATERIALS
Lafayette, Ind., June 13–18, 1965

ASTM SPECIAL TECHNICAL PUBLICATION NO. 396

Price \$7.00; to Members \$4.90



© BY AMERICAN SOCIETY FOR TESTING AND MATERIALS 1966 Library of Congress Catalog Card Number: 59-8773

NOTE

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

Foreword

The papers in the Symposium on Advances in Electron Metallography were presented on June 15, 1965 during the Sixty-eighth Annual Meeting of the Society held at Lafayette, Indiana. The symposium was sponsored by Subcommittee XI (Electron Microscopy, Diffraction, and Microprobe Analysis) of Committee E-4 on Metallography. The chairman of the Symposium Committee was B. R. Banerjee of Crucible Steel Company of America. The session was presided over by C. M. Schwartz of Battelle Memorial Institute.

ASTM Advances in Electron Metallography Series

Advances in Metallography (Vol. 1), STP 245, 1958, 120 pp., \$4.00

Electron Metallography (Advances in Electron Metallography, Vol. 2), STP 262, 1960, 128 pp., \$4.25

Advances in Electron Metallography and Electron Probe Microanalysis (Advances in Electron Metallography, Vol. 3), STP 317, 1962, 208 pp., \$6.00

Advances in Techniques in Electron Metallography (Advances in Electron Metallography, Vol. 4), STP 339, 1963, 72 pp., \$3.25

Techniques of Electron Microscopy, Diffraction, and Microprobe Analysis (Advances in Electron Metallography, Vol. 5), STP 372, 1965, 90 pp., \$3.75

Advances in Electron Metallography (Vol. 6), STP 396, 1966, 131 pp., \$7.00

This series is a continuing one sponsored by Subcommittee XI on Electron Microstructure of Metals of ASTM Committee E-4 on Metallography.

Contents

Introduction	1
Preliminary Evaluation of Some Luminescent Phosphors for Use in	
Viewing Screens in the Electron Microscope—R. P. MORENSKI	4
Electron Microautoradiography and Its Application to the Study of	
Hydrogen Distribution in Steel—G. B. GILPIN, D. H. PAUL, S. K.	
ASUNMAA, AND N. A. TINER	7
A Metallographic Study of the Tensile Deformation of a Copper 3.12	
Per Cent Cobalt Alloy—v. A. PHILLIPS	21
Investigation of the Substructure of Stainless Steel After Explosive	
Shock Deformation—M. C. INMAN, L. E. MURR, AND M. F. ROSE	39
Grain-Boundary Carbides in High-Speed Tool and Hot-Work Die	
Steels—B. R. BANERJEE, J. M. CAPENOS, AND J. J. HAUSER	49
Transmission Electron Microscope Study of the Structures Produced	
During the First Stage of Tempering in a 1.40 Weight Per Cent	
Carbon Steelm. r. jackson and g. krauss	62
Microstructural Alterations in Rolling Contact Fatigue—A. H. KING	
AND J. L. O'BRIEN	74
Specimen Carburization by Electron-Beam Contamination—A. SZIRMAE	89
A Laser Heating Device for Metallographic Studies—G. R. SPEICH,	
A. SZIRMAE, AND R. M. FISHER	97
Aging Kinetics in 300-Grade Marage Steel—B. R. BANERJEE, J. M.	
CAPENOS, AND J. J. HAUSER	115

THIS PUBLICATION is one of many issued by the American Society for Testing and Materials in connection with its work of promoting knowledge of the properties of materials and developing standard specifications and tests for materials. Much of the data result from the voluntary contributions of many of the country's leading technical authorities from industry, scientific agencies, and government.

Over the years the Society has published many technical symposiums, reports, and special books. These may consist of a series of technical papers, reports by the ASTM technical committees, or compilations of data developed in special Society groups with many organizations cooperating. A list of ASTM publications and information on the work of the Society will be surnished on request.

