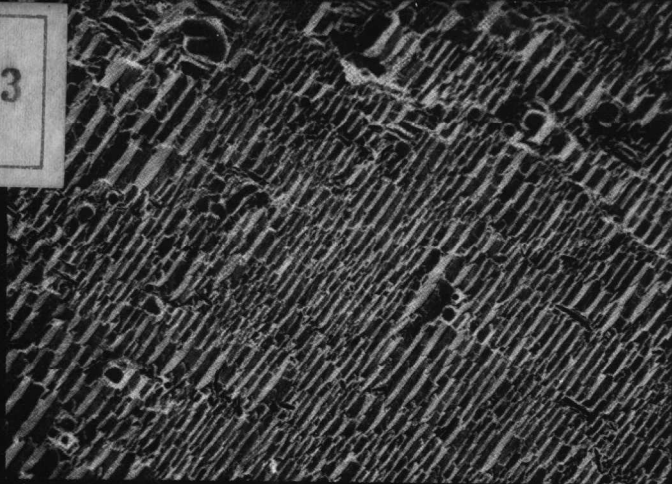


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Fracture Mechanics

Eighteenth Symposium

READ/REED

editors

STP 945



FRACTURE MECHANICS: EIGHTEENTH SYMPOSIUM

**Eighteenth National Symposium
on Fracture Mechanics
sponsored by
ASTM Committee E-24
on Fracture Testing
Boulder, Colorado, 25-27 June 1985**

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Foreword

The Eighteenth National Symposium on Fracture Mechanics was held on 25-27 June 1985 in Boulder, Colorado. ASTM Committee E-24 on Fracture Testing was the sponsor of this symposium. D. T. Read and R. P. Reed, National Bureau of Standards, served as coeditors of this publication. R. P. Reed also served as chairman of the symposium.

Related ASTM Publications

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Fracture Mechanics: Fifteenth Symposium, STP 833 (1984), 04-833000-30

Fracture Mechanics: Fourteenth Symposium—Volume I: Theory and Analysis, STP 791 (1983), 04-791001-30

Fracture Mechanics: Fourteenth Symposium—Volume II: Testing and Applications, STP 791 (1983), 04-791002-30

Fracture Mechanics (Thirteenth Conference), STP 743 (1981), 04-743000-30

A Note of Appreciation to Reviewers

The quality of the papers that appear in this publication reflects not only the obvious efforts of the authors but also the unheralded, though essential, work of the reviewers. On behalf of ASTM we acknowledge with appreciation their dedication to high professional standards and their sacrifice of time and effort.

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Introduction

This volume is based on the Eighteenth National Symposium on Fracture Mechanics, held in Boulder, Colorado, 25-27 June 1985, sponsored by ASTM Committee E-24 on Fracture Testing. The conference was held at the University of Colorado; the support of the CU Office of Conference Services for the conference arrangements was excellent.

The National Symposium on Fracture Mechanics has served as an annual state of the art review of current fracture research since its beginnings in 1965. The Eighteenth Symposium carried on this tradition creating an open forum for fracture researchers from the whole world. There were over eighty papers presented by formal talks and posters. Six speakers were specifically invited, including one from England, one from Japan, two from U.S. universities, one from U.S. industry, and one from a U.S. national laboratory. The submitted papers were grouped into 16 sessions. The papers on elastic plastic fracture mechanics made up four sessions, with one session on each of the allied areas of ductile-to-brittle transition and J-integral test methods. Four sessions on fatigue emphasized elevated temperature studies, including frequency and hold-time dependence, and effects of short cracks. Two sessions were held on analysis, including linear elastic and elastic-plastic analyses, and the remaining four sessions covered applications, crack arrest, micromechanisms, and subcritical crack growth.

Continuing the standard practice for ASTM Symposium publications, each paper in this volume has been peer-reviewed by knowledgeable researchers in relevant subject areas. The papers accepted for this volume have been revised and carefully edited to promote significance, technical accuracy, and relevance. It therefore truly represents a broad view of the current state of fracture mechanics research. It is recommended to stimulate and aid future research, to give design and failure analysis practitioners needed insight and new approaches, and to contribute to new and improved test standards through its record of advances in basic understanding and the latest test procedures and results.

R. P. Reed

National Bureau of Standards, Boulder, CO
80303; symposium chairman and coeditor.

Micromechanisms