

CORROSION FATIGUE

**Mechanics,
Metallurgy,
Electrochemistry
& Engineering**

**Crooker/Leis,
editors**

 **STP 801**

CORROSION FATIGUE: MECHANICS, METALLURGY, ELECTROCHEMISTRY, AND ENGINEERING

A symposium
sponsored by
ASTM Committees
E-9 on Fatigue,
E-24 on Fracture Testing,
and G-1 on Corrosion of Metals,
and Metal Properties Council
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B. Floyd Brown
1920-1981

Dedication

Dr. Floyd Brown was involved in planning and organizing the 1981 Symposium on Corrosion Fatigue from its earliest inception. He died on 16 August 1981 and those concerned with the symposium felt the loss of his wisdom and guidance.

Dr. Brown received his education at the University of Kentucky, the Carnegie Institute of Technology, and Cambridge University. Following an early academic career at the Massachusetts Institute of Technology and North Carolina State University, Dr. Brown joined the Naval Research Laboratory in 1954 as head of the Physical Metallurgy Branch, a position he held until his retirement from federal service in 1972. From 1972 until his death, he was a senior research scientist at American University in Washington, D.C.

Dr. Brown was probably best known in ASTM circles for his personal research in stress-corrosion cracking. He made some of the earliest and most important contributions to the marriage of fracture mechanics and corro-

sion science. Early development of the stress-corrosion cracking threshold parameter, K_{Isc} , was achieved in large measure by Dr. Brown. In association with co-workers, he pioneered knowledge of localized electrochemistry at crack tips in stress corrosion. Although less well recognized for his contributions to corrosion fatigue, he played a guiding role in numerous early studies of corrosion-fatigue crack growth. His final paper on corrosion fatigue appears in this volume.

Dr. Brown published and lectured widely during his career, which brought him international recognition and numerous professional awards. He was a member of ASTM Committee G-1 on Corrosion of Metals and the Committee on Publications. He will be sadly missed by those who benefited from his insight and encouragement when venturing into puzzling fields of investigation involving mechanical failure complicated by corrosion.

Foreword

This publication contains papers presented at the Symposium on Corrosion Fatigue: Mechanics, Metallurgy, Electrochemistry, and Engineering, held in St. Louis, Missouri, on 21-22 October 1981. Sponsors of the event were ASTM Committees E-9 on Fatigue, E-24 on Fracture Testing, and G-1 on Corrosion of Metals, and the Metal Properties Council. T. W. Crooker, Naval Research Laboratory, and B. N. Leis, Battelle Columbus Laboratories, served as symposium chairmen and have edited this publication.

Related ASTM Publications

Residual Stress Effects in Fatigue, STP 776 (1982), 04-776000-30

Low-Cycle Fatigue and Life Prediction, STP 770 (1982), 04-770000-30

Atmospheric Corrosion of Metals, STP 767 (1982), 04-767000-27

Design of Fatigue and Fracture Resistant Structures, STP 761 (1982),
04-761000-30

Stress Corrosion Cracking—The Slow Strain-Rate Technique, STP 665
(1979), 04-665000-27

Intergranular Corrosion of Stainless Alloys, STP 656 (1978), 04-656000-27

Fracture Mechanics (13th Conference), STP 743 (1981), 04-743000-30

Fractography and Materials Science, STP 733 (1981), 04-733000-30

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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