

# Mechanical Properties of **STRUCTURAL FILMS**

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EDITORS



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# ***Mechanical Properties of Structural Films***

*Christopher L. Muhlstein and Stuart B. Brown, editors*

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# Foreword

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This publication, *Mechanical Properties of Structural Films*, contains papers presented at the symposium of the same name held in Orlando, Florida, on 15–16 November 2000. The symposium was sponsored by ASTM Committee E08 on Fatigue and Fracture and by its Subcommittees E08.01 on Research and Education and E08.05 on Cyclic Deformation and Fatigue Crack Formation. The symposium chairman was Chris Muhlstein, University of California at Berkeley, and the symposium co-chairman was Stuart Brown, Exponent Failure Analysis Associates, Natick Massachusetts.

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# Overview

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Films or layers that are applied to substrates are frequently used for electronic, decorative, barrier, and wear applications. In addition, photolithography used by the microelectronics industry has led to the development of micron-scale mechanical components made from thin films. The class of structural materials that are manufactured as films is referred to as “structural films.” The mechanical properties of thin films have been recognized as an important part of the performance of materials for over a century. However, the advent of microelectromechanical systems and other applications of structural films has led to a renewed interest in both the measurement and understanding of the mechanical behavior of thin films.

The papers from this symposium are distributed among four major areas of structural films characterization. Presented by an international group of experts from six countries, this symposium is one of the most complete assemblies of papers on the characterization of the mechanical properties of structural films available to date. The symposium begins with sessions on elastic behavior, residual stress, and fracture and fatigue. The remaining sessions are dedicated to tensile testing and thermo-mechanical, wear, and radiation damage. In the rapidly developing field of structural films, this event is a milestone in the engineering of these materials systems and their characterization.

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