

Introduction

This symposium was organized to demonstrate the importance of utilizing state-of-the-art and new fractographic principles in materials science. These principles are applied in the upcoming text to a variety of metals, including iron, aluminum, titanium, copper, nickel, and tungsten-base alloys, and various nonmetals, including polymers, ceramics, and glasses.

The papers contained in this volume demonstrate that fracture analysis is more than just examination of the fracture surface. Variables such as the microstructure, stress conditions, and the environment control the fracture surface topography in materials. All of the papers presented here discuss at least one of these variables and its influence on the resulting fracture morphology. By correlating these variables with fractography, a more complete and detailed understanding of fracture characteristics in materials is made possible. This is necessary to comprehend more fully the complexities involved in fracture processes.

This volume should serve as a background reference and a guide for investigators interested in evaluating fracture surface topographies for a variety of materials. The high degree of sophistication needed to interpret complex fractographs should become evident as the reader becomes familiar with this document. We believe that the information contained within provides a firm foundation for continued advancement in fractography and demonstrates the level of refinement that has taken place recently in this field. We also think that the work presented here can be still further refined to provide for better understanding of fracture behavior in materials.

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