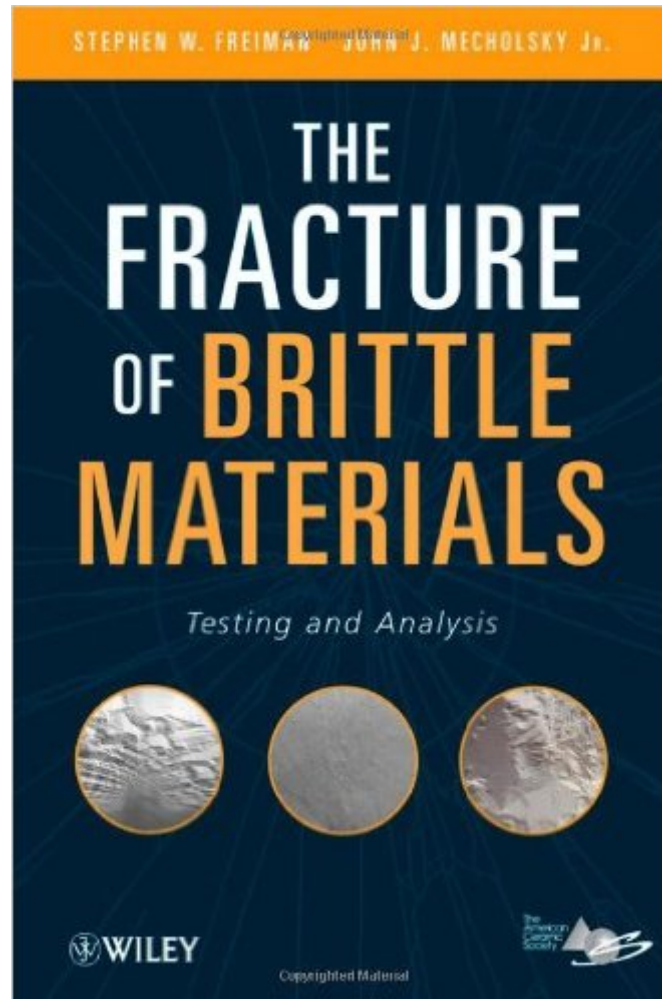


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The Fracture Of Brittle Materials: Testing And Analysis



Synopsis

Supports the use and development of strong, fracture-resistant, and mechanically reliable ceramic materials. The Fracture of Brittle Materials thoroughly sets forth the key scientific and engineering concepts underlying the selection of test procedures for fracture toughness, strength determination, and reliability predictions. With this book as their guide, readers can confidently test and analyze a broad range of brittle materials in order to make the best use of existing materials as well as to support the development of new materials. The authors explain the importance of microstructure in these determinations and describe the use of quantitative fractography in failure analysis. The Fracture of Brittle Materials is relevant to a broad range of ceramic materials (i.e., any inorganic non-metal), including semiconductors, cements and concrete, oxides, carbides, and nitrides. The book covers such topics as: Basic principles of fracture mechanics underlying brittle material tests and analysis procedures Theory and mechanisms of environmentally enhanced crack growth Fracture mechanics tests to determine a material's resistance to fast fracture Test and analysis methods to assess the strength of ceramics Methods to analyze the fracture process based on quantitative measurements of the fracture surface Effect of a material's microstructure Methods for predicting the lifetime of brittle components under stress Throughout the book, figures and illustrations help readers understand key concepts and methods. Replete with real-world examples, this text enables engineers and materials and ceramics scientists to select and implement the optimal testing methods for their particular research needs and then accurately analyze the results.

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