

Adhesion Measurement Methods: Theory and Practice (Mechanical Engineering (Marcel Dekker))

By Robert Lacombe

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Adhesion Measurement Methods: Theory and Practice provides practical information on the most important measurement techniques, their unique advantages and disadvantages, and the selection of the proper method for a given application. It includes useful information and formulae on adhesion related matters such as driving force formulae for various modes of delamination, methods for estimating stress buildup, and material property data in support of "back of the envelope" calculations.

The author presents optimal methods and tools used for measuring the adhesion of coatings and thin films as well as setting appropriate adhesion strength requirements. He provides a detailed overview of uses, implementation, and drawbacks for qualitative, semi-quantitative, and fully quantitative adhesion measurement techniques and self-loading systems. The book discusses thermal-mechanical behavior assessment, the application of the continuum theory of solids, and fracture mechanics, highlighting useful measures of adhesion strength such as stress intensity factor and strain energy release rate. It provides specific examples of how adhesion testing is carried out in practice, including the peel test, the scratch test, and the pull test, and describes the measurement of residual stress in a coating or other laminate structure. The book concludes with examples taken from the author's experience in the microelectronics industry and contains several appendices for looking up simple formulae and material property data for performing everyday calculations.

Adhesion Measurement Methods is an ideal addition for courses on materials science, mechanics of materials, or engineering design of laminate structures at the advanced undergraduate or graduate level.

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Editorial Review

Review
This is the first text to attempt to encompass the widely disparate topic of adhesion testing, and is written to serve as both a reference text and an educational tool. …the diagrams and text are useful in developing an understanding of adhesion properties and the forces at work under applied stress. …each chapter includes extensive references, and two of the appendices are a summary of available literature. …no adhesive lab should be without this text.
-Adhesives & Sealants Newsletter, Vol. 30, No. 3, March 13, 2006

Users Review

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