Series Preface

Mechanical engineering, an engineering discipline forged and shaped by the needs of the industrial revolution, is once again asked to do its substantial share in the call for industrial renewal. The general call is urgent as we face profound issues of productivity and competitiveness that require engineering solutions. The Mechanical Engineering Series features graduate texts and research monographs intended to address the need for information in contemporary areas of mechanical engineering.

The series is conceived as a comprehensive one that covers a broad range of concentrations important to mechanical engineering graduate education and research. We are fortunate to have a distinguished roster of consulting editors on the advisory board, each an expert in one of the areas of concentration. The names of the consulting editors are listed on the facing page of this volume. The areas of concentration are applied mechanics, biomechanics, computational mechanics, dynamic systems and control, energetics, mechanics of materials, processing, production systems, thermal science, and tribology.

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Frederick F. Ling
Preface

There has been considerable interest in the last two decades in the mechanical characterisation of thin film systems and small volumes of material using depth-sensing indentation tests utilising either spherical or pyramidal indenters. Usually, the principal goal of such testing is to obtain values for elastic modulus and hardness of the specimen material from experimental readings of indenter load and depth of penetration. The forces involved are usually in the millinewton range and are measured with a resolution of a few nanonewtons. The depths of penetration are in the order of nanometres, hence the term “nanoindentation.”

This third edition of Nanoindentation adds the results of new research in this field, and includes more information about nanoindentation instrumentation and applications. The book is intended for those who are entering the field for the first time and to act as a reference for those already conversant with the technique.

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Sydney, Australia

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