

# Foreword

This Report is the third in a series published under the auspices of the U.S. National Committee on Theoretical and Applied Mechanics (USNC/TAM), which is a standing committee of the National Research Council, the executive arm of the National Academy of Science, National Academy of Engineering, and the Institute of Medicine. So far, two such volumes have been published: Volume 1 on Research Directions in Computational Mechanics (NAS Press 1991) edited by Tinsley Oden, and Volume 2 on Research Directions in Fluid Dynamics (AIP Press 1996) edited by J.L. Lumley, Andreas Acrivos, Gary Leal and Sidney Liebovich.

Among the solid mechanics research surveys published earlier, the most notable is the one edited by James R. Rice (Applied Mechanics Reviews, October 1985, Vol. 38, pp. 1247–1308). It covers some of the areas discussed herein, in the form of overview chapters written by groups of authors. It retains much of its original technical value to this day, and it also offers a historical background for evaluation of the massive progress in the field in the intervening years.

In recognition of their now separate major status in mechanics, biomechanics and computational mechanics, both descendants of solid mechanics, were not reviewed for this volume but are expected to be subjects of future reports.

The present volume presents a collection of review papers written by leading researchers in specific areas of solid mechanics. Both the topics and authors were selected by members of the Advisory Board and the Editor. Each manuscript underwent technical peer review consistent with the standards of scientific publications. In general, the chapters are written to be understood by a non-specialist with scientific or engineering background. They are intended for Research Program Managers, Congressional Staff Members and other decision makers in the government and in industry who are looking for promising research directions, input to public policy initiatives, and solutions to technological problems; to specialists in other areas wishing to familiarize themselves with solid mechanics; and to students and researchers in the field.

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