



The behavior of structures composed of composite materials (Mechanics of Structural Systems)

By Jack R. Vinson, Robert L. Sierakowski

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While currently available texts dealing with the subject of high performance composite materials touch upon a spectra of topics such as mechanical metallurgy, physical metallurgy, micromechanics and macro mechanics of such systems, it is the specific purpose of this text to examine elements of the mechanics of structural components composed of composite materials. This text is intended for use in training engineers in this new technology and rational thought processes necessary to develop a better understanding of the behavior of such material systems for use as structural components. The concepts are further exploited in terms of the structural format and development to which the book is dedicated. To this end the development progresses systematically by first introducing the notion and concepts of what these new material classes are, the fabrication processes involved and their unique features relative to conventional monolithic materials. Such introductory remarks, while far too short in texts of this type, appear necessary as a precursor for engineers to develop a better understanding for design purposes of both the threshold limits to which the properties of such systems can be pushed as well as the practical limitations on their manufacture. Following these introductory remarks, an in-depth discussion of the important differences between composites and conventional monolithic material types is discussed in terms of developing the concepts associated with directional material properties.

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Editorial Review

Review

'The book is very well written and well illustrated as well. There are exercises at the end of each chapter which should enhance the book's usefulness as a course text. This book is distinguished from other general books in the field in that it has in-depth coverage of these topics: sandwich plates with composite-material facings; circular cylindrical shells; adhesive and mechanical joints. This book is highly recommended both as a text for courses in structural aspects of composites, as well as for practicing structures engineers and researchers involved with composites. In fact, a copy of it belongs in the library of every composite structures designer, analyst, and researcher.'

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About the Author

Dr. Vinson is the H. Fletcher Brown Professor of Mechanical and Aerospace Engineering at the University of Delaware. In 1977 he received the ONR-AIAA Structural Mechanics Award for his research in composite materials, and in 1981 he was awarded an ASME Centennial Award. He is active as a consultant to government and industry. He recently received a Fellowship from the Japan Society for the Promotion of Science for 1985. He has been Chairman of the American Organizing Committee for the Japan-United States Conferences on Composite Materials three times (1981, 1983 and 1986). *Dr. Sierakowski* is Professor and Chairman of the Civil Engineering Department at the Ohio State University. He has held many academic and industrial posts in the United States and has been a National Research Council Senior Research Fellow, a consultant to Air Force Laboratories, and a Visiting Professor at the Air Force Office of Scientific Research.

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