



Advanced Mechanics of Composite Materials and Structural Elements, Third Edition

By Valery Vasiliev, Evgeny V. Morozov

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Advanced Mechanics of Composite Materials and Structural Elements analyzes contemporary theoretical models at the micro- and macro levels of material structure. Its coverage of practical methods and approaches, experimental results, and optimization of composite material properties and structural component performance can be put to practical use by researchers and engineers.

The third edition of the book consists of twelve chapters progressively covering all structural levels of composite materials from their constituents through elementary plies and layers to laminates and laminated composite structural elements. All-new coverage of beams, plates and shells adds significant currency to researchers.

Composite materials have been the basis of many significant breakthroughs in industrial applications, particularly in aerospace structures, over the past forty years. Their high strength-to-weight and stiffness-to-weight ratios are the main material characteristics that attract the attention of the structural and design engineers. *Advanced Mechanics of Composite Materials and Structural Elements* helps ensure that researchers and engineers can continue to innovate in this vital field.

- Detailed physical and mathematical coverage of complex mechanics and analysis required in actual applications – not just standard homogeneous isotropic materials
- Environmental and manufacturing discussions enable practical implementation within manufacturing technology, experimental results, and design specifications.
- Discusses material behavior impacts in-depth such as nonlinear elasticity, plasticity, creep, structural nonlinearity enabling research and application of the special problems of material micro- and macro-mechanics

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Editorial Review

Review

"This graduate textbook introduces the traditional approaches to engineering the mechanics of structures made from the new composite materials that are very high in strength and stiffness in proportion to their weight... Previously published as Advanced Mechanics of Composite Materials in 2007, the third edition adds four chapters on composite beams, plates, and cylindrical shells."--**ProtoView.com, February 2014**

"The third edition of the book consists of twelve chapters progressively covering all structural levels of composite materials from their constituents through elementary plies and layers to laminates and laminated composite structural elements. All-new coverage of beams, plates and shells adds significant currency to researchers."--**MaterialsToday.com, December 16, 2013**

About the Author

Professor Valery V. Vasiliev

Professor, Moscow State University of Aviation Technology

V.V. Vasiliev became a Titled Professor in 1973, and was elected as a corresponding member of the USSR (now Russian) Academy of Sciences in 1984. He worked as an engineer of the Central Aero-Hydrodynamic Institute (61-62), senior researcher and associate professor of Moscow Aviation Institute (63-72), professor of Moscow Institute of Civil Aviation Engineering (72-73) and, since 1974, has been the Head of the Department of Mechanics and Optimisation of Processes and Structures of the Moscow State University of Aviation Technology. Since 1971, he has been the General Scientific Consultant of Central Research Institute of Special Machinery. In 1984 and 2001 he was awarded with the USSR State Prize and RF Government Prize for application of composite materials in aerospace structures. Professor Vasiliev is an author or co-author of 16 monographs, textbooks, handbooks, and design guides in mechanics of thin-walled and composite structures.

Professor Evgeny V. Morozov

Professor, University of New South Wales

Professor Morozov has more than 35 years practical and research experience in the field of composite technology. He co-authored four books and published more than 200 papers on mechanics and analysis of composite materials and structures.

He became a Full Professor of Aerospace Composite Structures, Moscow State University of Aviation Technology in 1991. In 1995, he joined the School of Mechanical Engineering, University of Natal, South Africa as the Professor of Manufacturing Systems. In 2007, he joined University of New South Wales (UNSW), Canberra, Australia as the Professor of Mechanical and Aerospace Engineering.

His achievements are recognized internationally, he has been a co-organizer and co-chairman of a number of international conferences, a member of Scientific International Conference Committees and Advisory Boards, paper reviewer, session chairman, and invited paper presenter at numerous international conferences on mechanics and modelling of composite materials and structures.

He is a Member of the Editorial Boards of Composite Structures (International Journal), Elsevier; the International Journal of Engineered Fibers and Fabrics (JEFF), INDA, TAPPI, The Fiber Society; Member of the Editorial Advisory Board of the International Journal “Curved and Layered Structures”, De Gruyter; Editorial Board Member for the Elsevier Journal “Heliyon”

Professor Morozov is Co-founder and Chair of the Advanced Composite Research Unit (ACRU) of the School of Engineering and Information Technology, UNSW Canberra, Australia established in July 2008.

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