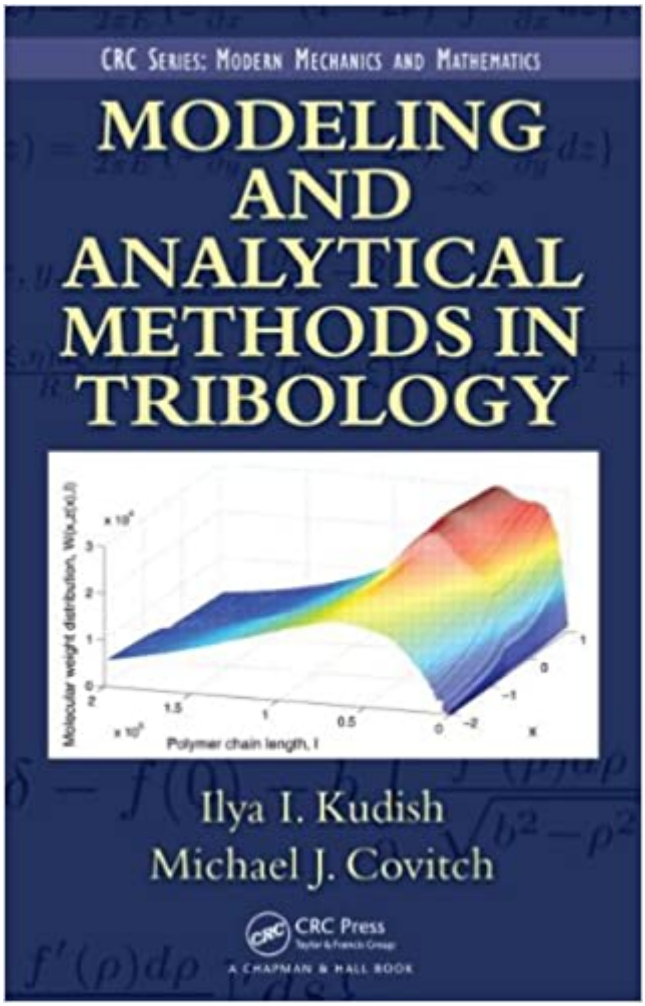
Modeling And Analytical Methods In Tribology (Modern Mechanics And Mathematics)



Synopsis

Improving our understanding of friction, lubrication, and fatigue, Modeling and Analytical Methods in Tribology presents a fresh approach to tribology that links advances in applied mathematics with fundamental problems in tribology related to contact elasticity, fracture mechanics, and fluid film lubrication. The authors incorporate the classical tenets of tribology while providing new mathematical solutions that address various shortcomings in existing theories. From contact interactions to contact fatigue life, the book connects traditionally separate areas of tribology research to create a coherent modeling methodology that encompasses asymptotic and numerical techniques. The authors often demonstrate the efficacy of the models by comparing predictions to experimental data. In most cases, they derive equations from first principles. They also rigorously prove problem formulations and derive certain solution properties. Solutions to problems are presented using simple analytical formulas, graphs, and tables. In addition, the end-of-chapter exercises highlight points important for comprehending the material and mastering the appropriate skills. Unlocking the secrets that govern the physics of lubricated and dry contacts, this book helps tribologists on their quest to reduce friction, minimize wear, and extend the operating life of mechanical equipment. It provides a real-world industrial perspective so that readers can attain a practical understanding of the material.

Book Information

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Customer Reviews

Ilya I. Kudish is a mathematics professor at Kettering University in Flint, Michigan. Dr. Kudish is a Fellow of the American Society of Mechanical Engineers (ASME) and Associate Editor of the ASME Journal of Tribology. Michael J. Covitch is a Senior Fellow at the Lubrizol Corporation in Wickliffe, Ohio. Dr. Covitch is the Secretary of the Society of Automotive Engineers (SAE) Engine Oil Viscosity Classification task force and a recipient of the SAE Excellence in Oral Presentation and Forest R. McFarland awards.

Modeling and Analytical Methods in Tribology (Modern Mechanics and Mathematics) Tribology of Polymeric Nanocomposites, Volume 55, Second Edition: Friction and Wear of Bulk Materials and Coatings (Tribology and Interface Engineering) Coatings Tribology, Volume 56, Second Edition: Properties, Mechanisms, Techniques and Applications in Surface Engineering (Tribology and Interface Engineering) Tribology of Elastomers, Volume 47 (Tribology and Interface Engineering) Tribology in Electrical Environments, Volume 49 (Tribology and Interface Engineering) Tribology of Plastic Materials: Their Characteristics and Applications to Sliding Components (Tribology Series) Engineering Tribology (Tribology Series) Counterfactuals and Causal Inference: Methods and Principles for Social Research (Analytical Methods for Social Research) The Analytical Chemistry of Cannabis: Quality Assessment, Assurance, and Regulation of Medicinal Marijuana and Cannabinoid Preparations (Emerging Issues in Analytical Chemistry) Essential Mathematics for Political and Social Research (Analytical Methods for Social Research) Essential Mathematics for Political and Social Research (Analytical Methods for Social Research) by Gill, Jeff published by Cambridge University Press (2006) Handbook of Micro/Nano Tribology, Second Edition (Mechanics & Materials Science) Analytical Fracture Mechanics (Dover Civil and Mechanical Engineering) Analytical Mechanics Mathematics for Quantum Mechanics: An Introductory Survey of Operators, Eigenvalues, and Linear Vector Spaces (Dover Books on Mathematics) Colors of Mathematics (Books Mechanics: Mathematics Book 1) Radiochemistry and Nuclear Methods of Analysis (Chemical Analysis: A Series of Monographs on Analytical Chemistry and Its Applications) ISO 3696:1987, Water for analytical laboratory use -- Specification and test methods Analytical Methods for Coal and Coal Products, Vol. 2 Analytical Methods for Lawyers (University Casebook Series)