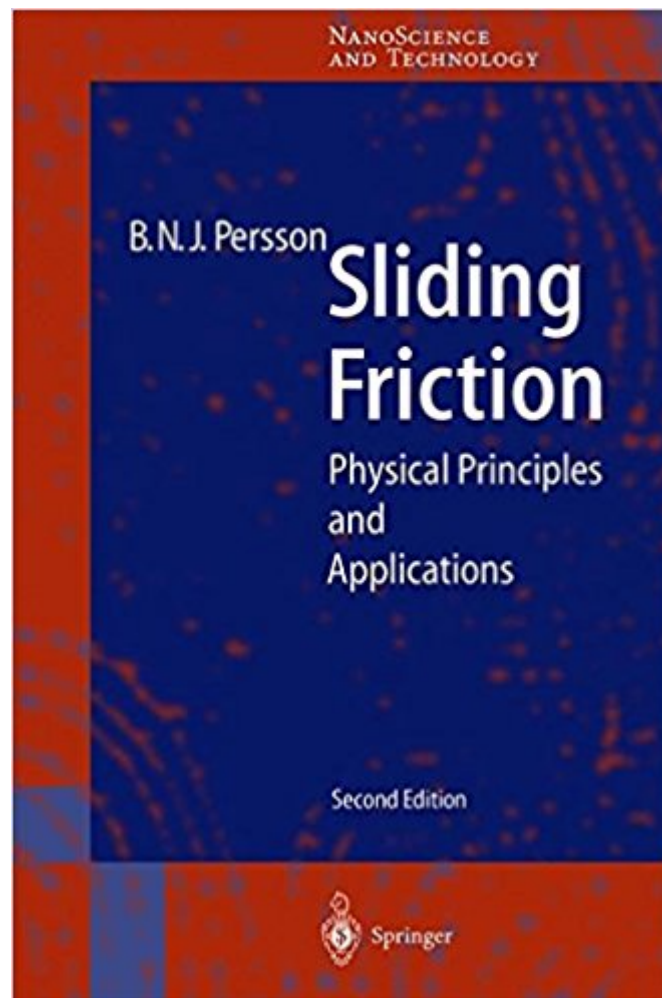




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Sliding Friction: Physical Principles And Applications (NanoScience And Technology)



Synopsis

The ability to produce durable low-friction surfaces and lubricant fluids has become an important factor in the miniaturization of moving components in many technological devices, e.g., magnetic storage, recording systems, miniature motors and many aerospace components. This book will be useful to physicists, chemists, materials scientists, and engineers who need to understand sliding friction. This second edition covers several new topics including friction on superconductors, simulations of the layering transition, nanoindentation, wear in combustion engines, rolling and sliding of carbon nanotubes, and the friction dynamics of granular materials.

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Customer Reviews

Sliding friction is one of the oldest problems in physics and certainly one of the most important from a practical point of view. The ability to produce durable low-friction surfaces and lubricant fluids has become an important factor in the miniaturization of moving components in many technological devices, e.g. magnetic storage, recording systems, miniature motors, and aerospace components. This book presents a broad overview of friction and an in-depth treatment of several fundamental and related topics. This monograph will be useful to physicists, chemists, materials scientists, and engineers who want to understand sliding friction. The book (or parts of it) could also form the basis for a modern undergraduate or graduate course on tribology. The author has been honored by the Volvo prize (1981), the Walter-Schottky prize (1996), and the John Yarwood Memorial Medal

(1998). New topics covered in this second edition include nanoindentation, wear in combustion engines, effects of humidity, rolling and sliding of carbon nanotubes and the friction dynamics of granular materials.

This comprehensive and well-written book is entirely devoted to fundamental aspects of friction, and especially to new theoretical and technological problems of sliding friction. The book can be very useful to physicists, chemists, materials scientists and engineer who want to understand the basic aspects of sliding friction. --Zentralblatt Math

Very thorough guide through the explanation of the origin of frictional effects and methods for calculation of the same. Probably graduate level reading, but still accessible with college level technical education. Vastly improved my understanding of friction beyond the basic $f = \mu N$ "Dry Coulomb friction" law taught in high school.

This is a fantastic book, which I recommend to all those interested in friction problems. The author did an excellent job at being both pedagogical and in depth in all the subjects that he touched..

Many different mechanisms can give rise to energy dissipation in sliding friction, depending on whether you are dealing with dry friction, boundary lubrication, hydrodynamic lubrication, or maybe electronic friction. In Bo Persson's book the physical models that capture the essential mechanisms of each regime are clearly described. At the same time, the reader learns about many recent (as well as classical) experiments in the field, including a broad list of references . I recommend the book to both graduate students and anybody who is working in the field or interested in the physical mechanisms of sliding friction.

This book is an excellent introduction to the physics of sliding friction. It puts an emphasis on the microscopic mechanisms underlying the phenomenon of friction. Everything is explained in a very clear way. Mathematics is kept to a minimum and only used to clarify things. The book also covers, in contrast to traditional books on tribology, topics like the friction on superconductors. I can recommend this book to both experienced scientists and graduate students who are interested in the physics of friction. I am sure you will enjoy reading it. Have fun!

The book by B.N.J. Persson has a unique position in the field of tribology. It manages to bridge

naturally many length scales phenomena into a single comprehensive frame work, from macroscopic mechanics of friction and wear down to atomic level. The book gives an excellent overview of current state of scientific knowledge, and it is very useful both for beginners in the field and experts. As a Ph.D student, the book helped me to get familiar and interested in the field, and it is still a major reference for many of the things I do.

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