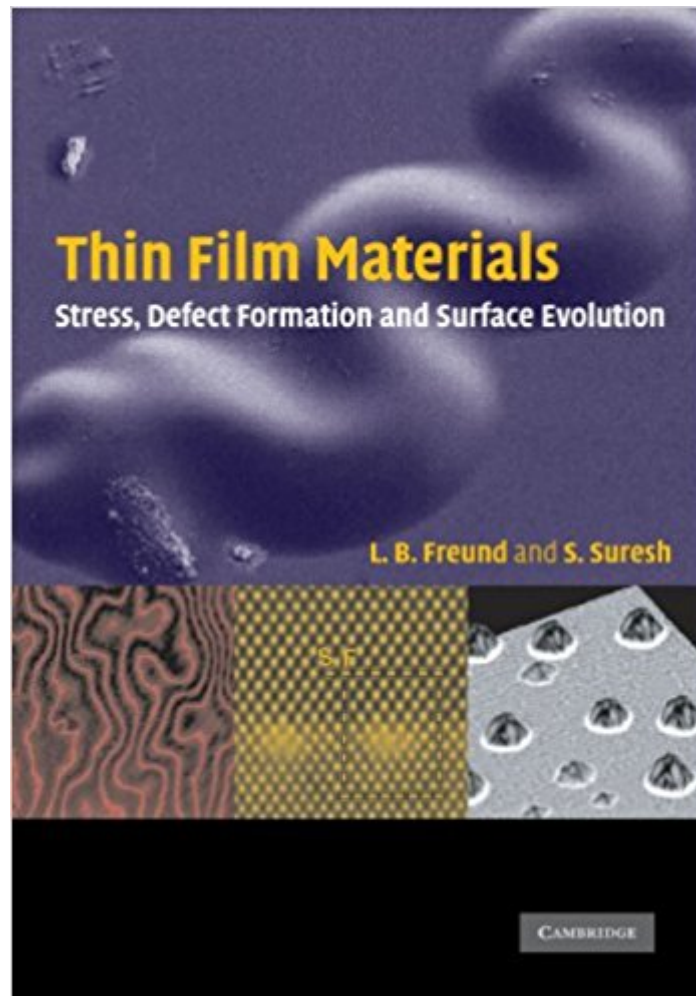




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# Thin Film Materials: Stress, Defect Formation And Surface Evolution



## Synopsis

This book provides comprehensive coverage of stress, defect formation and surface evolution in thin films. With its balanced coverage of theory, experiment and simulation and many homework problems, the text will be essential reading in senior undergraduate and graduate courses on thin films.

## Book Information

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## Customer Reviews

'The book is a landmark in a rich subject which has seen many developments over the past decade. In addition to being beautifully written, the book contains many illustrations, micrographs, and problems for students. The book will serve as a graduate text, as well as a comprehensive monograph everyone working in the field will want to own.' Professor John W. Hutchinson, Harvard University

'Freund and Suresh have written a masterpiece on thin film materials that will become a classic reference for this newly developed field. Their book provides an organized and beautifully written exposition of the subject of thin film mechanical behavior. For the first time there is a single starting point for the field. The book brings together materials and mechanics aspects of thin films effortlessly, reflecting the authors' expertise in joining these fields of science and engineering.'

Professor William D. Nix, Stanford University

'I would heartily recommend this book as an essential read for anyone working in any area of thin film deposition.' Materials World

'Thin Film Materials will prove a valuable resource. It contains a wealth of useful references and good indexes. It is richly illustrated, and there are good exercises after each chapter. For a graduate course in the field, it will

be hard to beat. And if the authors are right, there will be a growing demand for such courses.' The Times Higher Education Supplement

Thin films play an important role in many technological applications which include: microelectronic devices, magnetic storage media and surface coatings. This book provides a comprehensive coverage of the major issues and topics dealing with stress, defect formation and surface evolution in thin films. Of particular interest to engineers, materials scientists and physicists, it provides a balanced coverage of theory, experiment and simulation. Highly illustrated and containing numerous homework problems, this book will be essential reading on senior undergraduate and graduate courses on thin films.

good

Absolutely essential book for understanding fracture and delamination in thin films.

Un tema que me ha preocupado mucho durante el desarrollo de mi trabajo de tesis con recubrimientos es los esfuerzos residuales que se generan durante el proceso de síntesis.... definitivamente este libro ha despejado mis dudas sobre el tema y ha sido una excelente referencia para mi trabajo....

I like this book for it is a rather comprehensive treatment of the subject, and is written in a clear prose. However, one should realize that the focus is solely on the mechanical behavior of thin films, which could be attributed to the authors background and research interests. Virtually, all properties of thin films (electronic, magnetic, optical, ferroelectric, multiferroic etc.) are affected if not chiefly governed by the elastic coupling of "order" parameters with strains and such, especially at nanoscopic length scales. This book is primarily devoted to mechanical behavior of thin films in an isolated fashion. For instance, misfit dislocation and critical thickness phenomena in thin films is treated with linear elasticity models, so much so that it is of limited use in thin films of multifunctional materials (ferromagnetics, ferroelectrics, ferroelastics, multiferroics etc). However, the book by Freund and Suresh is an excellent introductory text from a mechanical behavior perspective. It develops all core concepts efficiently and thoroughly. And as such, it is of fundamental importance. I highly recommend it. Entropy4Life

Okay we followed this book for our lecture in thin films given by the first author of the book LB Freund, one of the best instructors i ever had. i will try not to be biased by his teaching skills while writing this review. i would say that its a must reference who are working in thin film area be it experimental or modeling. but i believe that you need to have a sound background atleast in continuum mechanics and elasticity to fully follow the mechanics (of deformation) part of the thin film on your own. the best thing i liked about this book is its methodical structure for e.g. deriving the basic Stoney's relation by minimizing the energy, then talk about its assumption in detail and then removing those assumptions one by one to make the relation more realistic (and offcourse more complicated). there are other things like material properties of common thin film materials used in microelectronics, topics on surface morphology etc. his writing style is very clear... again not for someone who doesnt have necessary background.

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