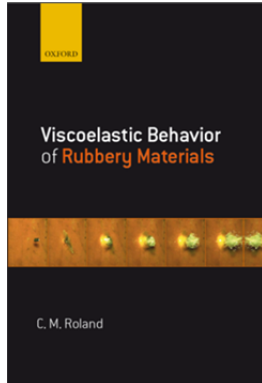


Viscoelastic Behaviour of Rubbery Materials

By: C Michael Roland

Oxford University Press, 2011, pp320, £55, ISBN 9780199574



The science of soft matter is concerned with condensed matter in which mechanical strength is low and in which thermal fluctuations may be important. Soft matter is used in applications including bulk polymer material, 'soft-nanotechnology', self-assembly, surfaces and interfaces. Within this broad field, the science of rubbery materials is fundamental, since they can exist in equilibrium unlike glassy or semi-crystalline thermoplastics. Rubbery materials also have 'pathdependent morphologies and process-specific properties which frustrate scientific inquiry' as the author states in his preface.

This book describes the relaxation dynamics of rubbery materials and aims to provide a molecular basis for many physical properties. Dr Roland's enthusiasm clearly shines through as he claims that 'rubber includes a broad class of substances with a richness of behaviour rivalled by few materials'. The book covers an impressive range of phenomena under the general heading of viscoelasticity. Each chapter goes into considerable detail summarising all the relevant research. The author also points to unsolved problems and areas of possible research.

For those with some prior familiarity with the subject, the chapter on cooperative local dynamics provides an interesting, detailed overview of the polymer physics. However, it is likely to be a little daunting for those without a background in polymers and mathematics.

This is not a beginner's book, and the lack of suggested problems or applications would limit its appeal as a graduate text. Nevertheless, the book's elegant presentation will make this a valuable reference for experienced researchers and specialists.

Stephen Kukureka, CEng FIMMM

Materials World Magazine, 02 Apr 2012

<http://www.iom3.org/book-review/viscoelastic-behaviour-rubbery-materials>

Mike Roland has written an excellent book that examines a complex subject in a very easy to digest manner. I am impressed by the way that he has integrated so many different aspects of rubber physics into a single coherent volume.

James Busfield, Queen Mary, University of London

<http://ukcatalogue.oup.com/product/9780199571574.do#.UHRMfFH1c7M>