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Symposium Proceedings: Volume 710

Editors: Alamgir Karim, Thomas P. Russell, Curtis W. Frank and Paul F. Nealey

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Polymer Interfaces and Thin Films

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PREFACE

Polymer interfaces are critical for many technological and industrial applications in thin films including microelectronics, packaging, automotive coatings and sensors or in bulk systems, such as adhesives or polymer blends. The structure and architecture of interfaces in thin films and bulk polymeric systems can be exceedingly complex. In thin films, the technological drive to diminish film thickness while simultaneously enhancing homogeneity, stability and adhesion, is a demanding challenge driving research in newer areas of nanofilled and controlled nanostructured and nanopatterned materials. Tailoring surface and interfacial properties is equally important for new developments in the traditional fields of bulk polymer blends, adhesion and wetting. Since empirical approaches can be time-consuming and costly, there is a need to develop a fundamental understanding of interfacial phenomena based on an interplay between experiment, theory, modeling and simulations with the ultimate goal of establishing structure-property relationships with quantitative predictive capabilities.

This book contains papers presented at Symposium DD, "Polymer Interfaces and Thin Films," held November 26-30 at the 2001 MRS Fall Meeting in Boston, Massachusetts, and a few additional contributions of related research. The symposium was a five-day event with an evening oral talk session and three poster sessions. The symposium was truly international as seen in the affiliations of the contributing authors. The symposium highlighted: Theory, Simulations and Dynamics; Block Copolymer Films; Combinatorial Approach to Polymers; Adhesion and Mechanical Properties; Self-Assembly by Polymeric Films; Lithographic, Electronic Properties; Nanoparticulate-Filled Films. Contribution from two joint sessions: Combinatorial Approach to Polymers and Self-Assembly by Polymeric Films, are included in this book which underscores the importance of surfaces and interfaces in many different areas of materials science. The synergy of novel experimental methods and fundamental physics on the molecular level enumerated in the contributions in this book underscores the drive of industrial and academic materials science moving towards molecular length scale phenomena and devices involving the nanoscale regime, biomaterials using combinatorial and nanopatterning approaches.

Financial support for this symposium was received from the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST), with seed money from the Materials Research Society. The editors thank all the authors for their contributions and patience, and the staff at MRS for all their help in the preparation of this book.

Alamgir Karim
Thomas P. Russell
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Paul F. Nealey

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