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Fundamentals of Gels and Self-Assembled Polymer Systems

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*Invited Paper

PREFACE

This volume contains the Proceedings of Symposium E, "Fundamentals of Gels and Self-Assembly Systems", from the 2013 MRS Fall Meeting held December 1-6, 2013 in Boston, Massachusetts.

The symposium focused on the most recent advances of the following topical categories: network formation and characterization, structure-property relationships in synthetic and biopolymer gels, self-assembly of biopolymers, responsive gels, nanostructures and composite materials. The symposium covered novel experimental tools and theoretical models to describe the behavior of various self-assembled systems. New insights were reported on the structure and dynamics of synthetic and biopolymer gels. This knowledge is essential for developing novel materials, improving and controlling material properties and performance. Several presentations were dedicated to the interface of polymer materials science with other fields, such as biomaterials and nanoscience. A number of papers dealt with the biomedical applications of gels (e.g., controlled release of antibiotics, tissue engineering). These applications require the creation of a well-defined microenvironment around the biologically active components to achieve the desired results. The papers in this volume illustrate the trends and recent progress in the field of supramolecular self-assembly and the important role of self-assembled structures in biomaterials science.

We would like to thank the staff at the Materials Research Society for their excellent work. We would also like to thank to all the contributors of this volume, authors and reviewers. We hope the volume will inspire for further developments in the field of polymer materials science.

Ferenc Horkay
Noshir Langrana
Mitsuhiro Shibayama
Sandip Basu

May 2014

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