DESCRIPTION

Materials scientists, polymer chemists, surface physicists and materials engineers will find this book a complete and detailed treatise on the field of polymer brushes, their synthesis, characterization and manifold applications. In a first section, the various synthetic pathways and different surface materials are introduced and explained, followed by a second section covering important aspects of characterization and analysis in both flat surfaces and particles. These specific surface initiated polymerization (SIP) systems such as linear polymers, homopolymers, block copolymers, and hyperbranched polymers are unique compared to previously reported systems by chemisorption or physisorption. They have found their way in both large-scale and miniature applications of polymer brushes, which is covered in the last section. Such ‘hairy’ surfaces offer fascinating opportunities for addressing numerous problems of both academic and, in particular, industrial interest: high-quality, functional or protective coatings, composite materials, surface engineered particles, metal-organic interfaces, biological applications, micro-patterning, colloids, nanoparticles, functional devices, and many more. It is the desire of the authors that this book will be of benefit to readers who want to “brush-up on polymers”.

ABOUT THE AUTHOR

Rigoberto C. Advincula is currently Associate Professor at the Department of Chemistry of the University of Houston. He obtained his bachelor’s degree from the University of the Philippines in 1987 and his PhD in Chemistry at the University of Florida seven years later.
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Jürgen Rühe has been Professor for Chemistry and Physics of Interfaces at the University of Freiburg since 1999 and since 2001 he is also director of the Institute for Microsystems Technology. Prior to this, he was associate professor at the Max-Planck-Institute for Polymer Research. He has been visiting scientist at the IBM Almaden Laboratories, at the RIKEN Institute in Tokyo, Japan, the Cavendish Laboratories of Physics, Stanford University and Georgia Institute for Technology. Professor Rühe has won the prize for Chemistry awarded by the Academy of Sciences in Göttingen (1999) and the DECHEMA award 2001. His research interests are directed towards the development of new methods for the generation of tailor-made surfaces and the use of polymers in nanosciences and microsystems technology.

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