Innovative Polymeric Adsorbents

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Radiation-Induced Graft Polymerization

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Preface

The recovery of useful components or the removal of harmful components is essential for sustaining the world's resources and environments. Adsorption methods are economically feasible and environmentally friendly to capture useful and harmful ions and molecules using specified adsorbents. However, conventional adsorbents such as ion-exchange resins and activated carbon have limitations in terms of form and functionality. By radiation-induced graft polymerization, we have prepared various forms of polymeric adsorbents that include ion-exchange, chelate-forming, and affinity moieties and that immobilize extractants, enzymes, and inorganic compounds to satisfy the requirements for emerging applications and to realize high performance.

Some of our polymeric adsorbents and materials have been manufactured and used commercially. This book covers an extensive scope of topics on separation: the removal of radioactive ions at TEPCO's Fukushima Daiichi Nuclear Power Plant, the recovery of noble metal ions, the purification of bioproducts, enzyme immobilization, and the electrodialysis of seawater.

Researchers and engineers engaged in separation of ions or molecules always have a continuing interest in novel adsorbents. In this book, adsorbents with new forms and high performance are presented on the basis of scientific elucidation of graft-chain behavior.

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