

Innovative Polymeric Adsorbents

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Radiation-Induced Graft Polymerization

 Springer

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ISBN 978-981-10-8562-8 ISBN 978-981-10-8563-5 (eBook)
<https://doi.org/10.1007/978-981-10-8563-5>

Library of Congress Control Number: 2018934450

Translation from the Japanese language edition: *Gurafuto Gyugo Niyoru Kobunshi Kyutyakuzai Kakumei* by Kyoichi Saito, Kunio Fujiwara and Takanobu Sugo, © Maruzen Co. 2014. All Rights Reserved.

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Printed on acid-free paper

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The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

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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Acknowledgements

Polymeric trunk polymers are essential starting materials in the preparation of novel polymeric adsorbents by radiation-induced graft polymerization. We appreciate the generosity of Asahi Kasei Chemicals Co., Mitsubishi Rayon Co., now Mitsubishi Chemical Co., INOAC Corporation, and TAMAPOLY Co. for supplying various trunk polymers such as porous hollow-fiber membranes, porous sheets, and non-porous films.

K. Saito worked in the Department of Chemical Engineering at the University of Tokyo from 1982 to 1994, and in 1994 joined the Department of Applied Chemistry and Biotechnology at Chiba University. All results and discussion described in this book were derived from the continuous efforts of many students of the two universities. The students were fascinated by the magic of radiation-induced graft polymerization, and they devised both preparation schemes for polymeric adsorbents and evaluation methods for their performance. In particular, we thank the following students previously and currently enrolled in doctoral courses at the two universities for their contribution to scientific findings and technological inventions: Takahiro Hori, Hideyuki Yamagishi, Kazuya Uezu, Min Kim, Satoshi Tsuneda, Satoshi Konishi, William Lee, Kei Kiyohara, Noboru Kubota, Hidetaka Kawakita, Kaori Saito, Shiho Asai, Katsuyuki Sato, Akio Iwanade, Kazuyoshi Miyoshi, Nobuyoshi Shoji, Ryo Ishihara, Kyohei Hagiwara, Yuichi Shimoda, Koji Miyauchi, Kunio Fujiwara, Takato Harayama, and Tsuyoshi Nagatani.

We thank Tsuyoshi Yoshida, Junichi Kanno, Satoshi Tsuneda, Takashi Yoshikawa, Kazuyoshi Miyoshi, Ryo Ishihara, Shiho Asai, Yuta Sekiya, Akio Iwanade, Satoshi Umino, Yuya Hirayama, Daiki Kudo, Masaki Iwazaki, and Shoko Naruke for preparing the fine graphics and illustrations. We also thank Dr. Yuji Hazeyama for his exhaustive review of our English manuscript. Our thanks go to Mrs. Michiko Hamamoto, our secretary, for editing the manuscript. Our appreciation also goes to Dr. Daisuke Umeno and Dr. Shigeko Noma-Kawai in our

laboratory for valuable discussion. Finally, we would like to express our appreciation to Dr. Shinichi Koizumi and Ms. Asami Komada of Springer Japan for their patience and support.

Chiba, Japan
Takasaki, Japan
Takasaki, Japan
December 2017

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