

e-POLYMERS

EDITORS-IN-CHIEF

Seema Agarwal, Bayreuth, Germany
Andreas Greiner, Bayreuth, Germany

EDITOR

Jian Ji, Hangzhou, China

FOUNDING EDITORS

Hartwig Hoecker
Stanislaw Penczek

EDITORIAL ADVISORY BOARD

Felix Schacher, Jena, Germany
Susanta Banerjee, Kharagpur, India
Prasad Shastri, Freiburg, Germany
Stephen Eichhorn, Exeter, UK
Zhu Meifang, Shanghai, China
Yasuhiko Iwasaki, Osaka, Japan
Piming Ma, Jiangsu, China
Stan Slomkowski, Lodz, Poland
Tamer Uyar, Ankara, Turkey

DE GRUYTER

ABSTRACTED/INDEXED IN Celdes, Chemical Abstracts Service (CAS), Chemical Abstracts Service (CAS) - SciFinder, CNPIEC, EBSCO Discovery Service, Electronic Journals Library, Elsevier - SCOPUS, J-Gate, Naviga (Softweco), Polymer Library, Primo Central (ExLibris), SCImago (SJR), Summon (Serials Solutions/ProQuest), TDOne (TDNet), TEMA Technik und Management, Thomson Reuters - Current Contents/Physical, Chemical and Earth Sciences, Thomson Reuters - Science Citation Index, Thomson Reuters - Science Citation Index Expanded, Ulrich's Periodicals Directory/ulrichsweb, WorldCat (OCLC)

The publisher, together with the authors and editors, has taken great pains to ensure that all information presented in this work (programs, applications, amounts, dosages, etc.) reflects the standard of knowledge at the time of publication. Despite careful manuscript preparation and proof correction, errors can nevertheless occur. Authors, editors and publisher disclaim all responsibility for any errors or omissions of liability for the results obtained from use of the information, or parts thereof, contained in this work.

The citation of registered names, trade names, trademarks, etc. in this work does not imply, even in the absence of a specific statement, that such names are exempt from laws and regulations protecting trademarks etc. and therefore free for general use.

ISSN 2197-4586 · e-ISSN 1618-7229

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/journals/epoly

RESPONSIBLE EDITORS Prof. Dr. Seema Agarwal, Chair of Macromolecular Science II, University of Bayreuth, Building NW II, Universitätsstraße 30, 95440 Bayreuth, Tel.: +49-921-553397, Email agarwal@uni-bayreuth.de
Prof. Dr. Andreas Greiner, Chair of Macromolecular Science II, University of Bayreuth, Building NW II, Universitätsstraße 30, 95440 Bayreuth, Tel.: +49-921-553399, Email greiner@uni-bayreuth.de

JOURNAL MANAGER Dr. Karin E. Lason, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05-276, Fax: +49 (0)30 260 05-184, Email: epolymers.editorial@degruyter.com

RESPONSIBLE FOR ADVERTISEMENTS Claudia Neumann, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05-226, Fax: +49 (0)30 260 05-264, Email: anzeigen@degruyter.com

© 2016 Walter de Gruyter GmbH, Berlin/Boston

TYPESETTING Compuscript Ltd., Shannon, Ireland

PRINTING Franz X. Stückle Druck und Verlag e.K., Ettenheim
Printed in Germany

COVER ILLUSTRATION Chromium ions in wastewater, have attracted great attention due to their toxic effects to the environment and human health. The adsorption process has been widely studied for removal of Cr (VI) by testing different adsorbents. Recently, use of biopolymers in preparation of hydrogels has become popular due to their biocompatibility, biodegradability and nontoxicity. Chitosan specifically, as a naturally occurring polymer, suffers from mechanical strength and solubility problems. In order to overcome these drawbacks, new formulations are currently being investigated. In this study a "3-in-1" type triple adsorbent system in which *Spirulina* biosorbent is immobilized on/in halloysite nanotubes in a physically crosslinked chitosan composite hydrogel resulted in an effective metal removal carrier. Many bunches of nanotubes excluded from the surface act as positively charged receptors and extra collector domains for chromate anions so that the adsorption window enlarges considerably.

For more information on this topic please read the article on *Biosorbent immobilized nanotube reinforced hydrogel carriers for heavy metal removal processes* by Emre Tekay, Sinan Şen, Demet Aydınoglu and Nihan Nugay on pages 15–24 in this issue. Copyright holders of the image are all aforementioned authors of the contribution. Contact: Emre Tekay and Sinan Şen: Yalova University, Yalova 77100, Turkey, Tel.: +90 2268155411, Fax: +90 2268155401, e-mail: sinans@yalova.edu.tr; Demet Aydınoglu: Department of Food Process Technologies at Yalova University; Nihan Nugay: Department of Chemistry, Polymer Research Center, Boğaziçi University, Istanbul 34342, Turkey.



Offenlegung der Inhaber und Beteiligungsverhältnisse gem. § 7a Abs. 1 Ziff. 1, Abs. 2 Ziff. 3 des Berliner Pressegesetzes: Die Gesellschafter der Walter de Gruyter GmbH sind: Clara Cram Stiftung, Berlin; Cram, Gisela, Rentnerin, Berlin; Cram, Dr. Georg-Martin, Unternehmens-Systemberater, Stadtbergen; Cram, Maike, Berlin; Cram, Jens, Mannheim; Cram-Heydrich, Ingrid, Betriebsleiterin, Tuxpan / Michoacan (Mexiko); Cram-Heydrich, Sabina, Mexico, DF (Mexiko); Cram, Silke, Wissenschaftlerin, Mexico DF (Mexiko); Cram, Björn, Aachen; Cram, Ella Anita, Rentnerin, Berlin; Cram, Berit, Greifswald; Cram-Gomez, Susanne, Mexico DF (Mexiko); Cram-Heydrich, Walter, Mexico DF (Mexiko); Cram-Heydrich, Kurt, Angestellter, Mexico DF (Mexiko); Duvenbeck, Brigitta, Oberstudienrätin i.R., Bad Homburg; Gädeke, Gudula, M.A., Atemtherapeutin/Lehrerin, Tübingen; Gädeke, Martin, Einzelunternehmer, Würzburg; Lubasch, Dr. Annette, Ärztin, Berlin; Schütz, Dr. Christa, Ärztin, Mannheim; Schütz, Sonja, Berlin; Schütz, Juliane, Berlin; Schütz, Antje, Berlin; Schütz, Valentin, Berlin; Seils, Dorothee, Apothekerin, Stuttgart; Seils, Gabriele, Journalistin, Berlin; Seils, Dr. Clara-Eugenie, Oberstudienrätin i.R., Reppenstedt; Seils, Christoph, Journalist, Berlin; Siebert, John-Walter, Pfarrer, Oberstenfeld; Walter de Gruyter Stiftung, Berlin.

Contents

Review

Long Jiang, Tianfeng Shen, Pengwu Xu, Xiyuan Zhao, Xiaojie Li, Weifu Dong, Piming Ma and Mingqing Chen
Crystallization modification of poly(lactide) by using nucleating agents and stereocomplexation — 1

Full length articles

Emre Tekay, Sinan Şen, Demet Aydınoglu and Nihan Nugay
Biosorbent immobilized nanotube reinforced hydrogel carriers for heavy metal removal processes — 15

S. Arunkumar, H.N. Shivakumar, B.G. Desai and Purnima Ashok
Effect of gel properties on transdermal iontophoretic delivery of diclofenac sodium — 25

Samira Moqadam and Mehdi Salami-Kalajahi
Halogenated sunflower oil as a precursor for synthesis of polysulfide polymer — 33

Xue-Hui Zhan
Fe-mediated ICAR ATRP of methyl methacrylate on photoinduced miniemulsion polymerization — 41

Guilherme Luiz Dotto, Juliana Machado Nascimento dos Santos, Jaqueline Motta de Moura and Luiz Antonio de Almeida Pinto
Ultrasound-assisted treatment of chitin: evaluation of physicochemical characteristics and dye removal potential — 49

Ayyaz Ahmad, Jianjia Liu, Xiaochi Liu, Li Li, Yisheng Xu and Xuhong Guo
Synthesis of Ag₂O nano-catalyst in the spherical polyelectrolyte brushes and its application in visible photo driven degradation of dye — 57

Narges Taheri and Soheil Sayyahi
Effect of clay loading on the structural and mechanical properties of organoclay/HDI-based thermoplastic polyurethane nanocomposites — 65

Haci Ökkes Demir, Zakir Caldiran, Kadem Meral, Yilmaz Şahin, Murat Acar and Sakir Aydogan
The effect of temperature on the electrical characterization of a poly(phenoxy-imine)/ p-silicon heterojunction — 75

Xiaoping Zhan, Yuxuan Xin, Kai Zhao, Shuai Wang, Jian Chen, Yuankui Zhang and Zhenmin Mao
Synthesis, characterization and molecular dynamics simulation of the polyacrylates membranes — 83