

GREEN PROCESSING AND SYNTHESIS

EDITOR-IN-CHIEF

Volker Hessel

Department of Chemical Engineering and Chemistry
Eindhoven University of Technology, The Netherlands

EDITORS

Galip Akay

Formerly School of Chemical Engineering and Advanced Materials
Newcastle University, UK

Isabel Arends

Biocatalysis and Organic Chemistry, Department of Biotechnology
Delft University of Technology, The Netherlands

Michael C. Cann

Environmental Science at Chemistry Department
University of Scranton, USA

Yi Cheng

Beijing Key Laboratory of Green Reaction Engineering and Technology
Tsinghua University Beijing, China

Giancarlo Cravotto

Organic Chemistry
University of Torino, Italy

Heidrun Gruber-Wölfler

Institute of Process and Particle Engineering
Graz University of Technology, Austria

Dana Kralisch

Institute for Technical Chemistry and Environmental Chemistry
Friedrich Schiller University Jena, Germany

Krishna D. P. Nigam

Department of Chemical Engineering
Institute of Technology Delhi, India

Basu Saha

Engineering, Science and The Built Environment, Department of Applied Science
London South Bank University, UK

Christophe A. Serra

Laboratory of Polymer Engineering for High Technologies
University of Strasbourg, France

Wei Zhang

Boston Center for Green Chemistry
University of Massachusetts Boston, USA

DE GRUYTER

ABSTRACTED/INDEXED IN Baidu Scholar; Celdes; Chemical Abstracts Service (CAS); Chemical Abstracts Service (CAS) - SciFinder; CNKI Scholar (China National Knowledge Infrastructure); CNPIEC; EBSCO - TOC Premier; EBSCO Discovery Service; Elsevier - SCOPUS; Genamics JournalSeek; GeoArchive; Google Scholar; Inspec; J-Gate; JournalTOCs; Naviga (Softweco); Paperbase; Pirabase; Polymer Library; Primo Central (ExLibris); ProQuest (relevant databases); ReadCube; ResearchGate; SCImago (SJR); Summon (Serials Solutions/ProQuest); TDOne (TDNet); TEMA Technik und Management; Thomson Reuters - Current Contents/Physical, Chemical and Earth Sciences; Thomson Reuters - Journal Citation Reports/Science Edition; 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 2191-9542 · e-ISSN 2191-9550

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

RESPONSIBLE EDITOR Prof. Volker Hessel, Micro Flow Chemistry and Process Technology Group, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, Het Kranenveld, Bldg. 14 (Helix), STW 1.45, 5612 AZ Eindhoven, The Netherlands, Tel.: +31-40-247 2973, Email: v.hessel@tue.nl

ASSISTANT MANAGING EDITOR Jannelies Smit, Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, Het Kranenveld, Bldg. 14 (Helix), STW 1.50, 5612 AZ Eindhoven, The Netherlands, Tel.: +31-40-247 5280, Email: ST-GPS@tue.nl

JOURNAL MANAGER Dr. Gunda Stöber, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, Tel.: +49 (0)30 260 05-279, Fax: +49 (0)30 260 05-298, Email: gps.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. Stücker Druck und Verlag e.K., Ettenheim
Printed in Germany



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, Julianne, 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

Special issue: Microwave energy treatment

Issue editor: Shaohua Ju

Publisher's note

Julia Lauterbach

Happy Birthday *Green Processing and Synthesis*! — 1

Editorial

Volker Hessel

Merging of the sciences and technologies: non-technological barriers — 3

Microwave energy treatment

Shaohua Ju

Microwave energy: a green synthesis and treatment solution — 5

Hongying Xia, Song Cheng, Libo Zhang and Jinhui Peng
Utilization of walnut shell as a feedstock for preparing high surface area activated carbon by microwave induced activation: effect of activation agents — 7

Libo Zhang, Wenqian Guo, Tu Hu, Jing Li, Jinhui Peng, Shaohua Yin, Guo Lin and Yuhang Liu
Optimization of drying ammonium tetramolybdate by microwave heating using response surface methodology — 15

Aiyuan Ma, Libo Zhang, Jinhui Peng, Xuemei Zheng, Shiwei Li, Kun Yang and Weiheng Chen
Extraction of zinc from blast furnace dust in ammonia leaching system — 23

Jun Chang, Erdong Zhang, Changjiang Yang, Junwen Zhou, Jinhui Peng, Libo Zhang and Chandrasekar Srinivasakannan
Kinetics of ultrasound-assisted silver leaching from sintering dust using thiourea — 31

Weiheng Chen, Libo Zhang, Jinhui Peng, Shaohua Yin, Aiyuan Ma, Kun Yang, Shiwei Li and Feng Xie
Effects of roasting pretreatment on zinc leaching from complicated zinc ores — 41

Aiyuan Ma, Xuemei Zheng, Shixing Wang, Jinhui Peng, Libo Zhang and Zhiqiang Li
Study on dechlorination kinetics from zinc oxide dust by clean metallurgy technology — 49

Guo Lin, Libo Zhang, Li Yang, Tu Hu and Jinhui Peng
Microwave roasting of agglomerated flux for submerged-arc welding — 59

Shuaidan Lu, Shuchen Sun, Xiaoxiao Huang, Xiaoping Zhu, Ganfeng Tu and Kuanhe Li
Glass-forming ability and mechanical properties of a $Zr_{52.8}Cu_{29.1}Ni_{7.3}Al_{9.8}Y_1$ bulk metallic glass prepared by hereditary process — 65

Original articles

Balaji B. Totawar, Pramod S. Kulkarni and Zubaidha K. Pudukulathan
An improved and sustainable approach for the synthesis of α,β -dibromo ketones using ceric ammonium nitrate and ammonium bromide — 71

Vrushali M. Kulkarni and Virendra K. Rathod
Utilization of waste dried *Mangifera indica* leaves for extraction of mangiferin by conventional batch extraction and advance three-phase partitioning — 79

Huang Run, Shanshan Bi, Pengsheng Liu, Benjun Xu and Jinzhu Zhang
Research on the reduction of Guizhou oolitic hematite by hydrogen — 87

Kamalpreet Kaur, Pranjal Jain, Amit Sobti and Amrit Pal Toor

Sulfated metal oxides: eco-friendly green catalysts for esterification of nonanoic acid with methanol — 93

Hira Munir, Muhammad Shahid, Fozia Anjum, Muhammad Nadeem Akhtar, Sayed M. Badawy and Ahmed El-Ghorab

Application of *Acacia modesta* and *Dalbergia sissoo* gums as green matrix for silver nanoparticle binding — 101

Conference announcement

Conferences 2016–2017 — 107