

# RADIOCHIMICA ACTA

INTERNATIONAL JOURNAL FOR CHEMICAL  
ASPECTS OF NUCLEAR SCIENCE AND TECHNOLOGY

**EDITOR-IN-CHIEF**

*S. M. Qaim, Jülich*

**EDITORS**

*T. E. Albrecht-Schönzart, Colorado*

*Z. Chai, Beijing*

*Ch. E. Düllmann, Mainz*

*S. S. Jurisson, Columbia*

*C. Le Naour, Orsay Cedex*

*P. K. Mohapatra, Mumbai*

*A. Yokoyama, Kanazawa*

**ADVISORY BOARD**

*W. Cha, Daejeon*

*N. Dacheux, Montpellier*

*R. Eichler, Villigen*

*C. Ekberg, Gothenburg*

*M. Fassbender, Los Alamos*

*H. Geckeis, Karlsruhe*

*S. N. Kalmykov, Moscow*

*S. Lahiri, Kolkata*

*V. K. Manchanda, Mumbai*

*G. Modolo, Jülich*

*Y. Nagame, Ibaraki*

*B. Neumaier, Jülich*

*F. Rösch, Mainz*

*Th. J. Ruth, Vancouver*

*R. Taylor, Warrington*

*M. S. Uddin, Dhaka*

*X. Wang, Beijing*

*M. Wasim, Islamabad*

**DE GRUYTER**

**ABSTRACTED/INDEXED IN** Baidu Scholar · Cabells Journalytics · Chemical Abstracts Service (CAS): CAPlus; SciFinder · Chimica · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · Dimensions · EBSCO (relevant databases) · EBSCO Discovery Service · Engineering Village · Genamics JournalSeek · Google Scholar · IBR (International Bibliography of Reviews of Scholarly Literature in the Humanities and Social Sciences) · IBZ (International Bibliography of Periodical Literature in the Humanities and Social Sciences) · Ingenta Connect · Inspec · Japan Science and Technology Agency (JST) · J-Gate · Journal Citation Reports/Science Edition · JournalGuide · MyScienceWork · Naver Academic · Naviga (Softweco) · Primo Central (ExLibris) · Publons · QOAM (Quality Open Access Market) · ReadCube · Reaxys · ScienceON (Korea Institute of Science and Technology Information) · Scilit · SCImago (SJR) · SCOPUS · Semantic Scholar · Sherpa/RoMEO · Summon (ProQuest) · TDNet · Ulrich's Periodicals Directory/ulrichsweb · WanFang Data · Web of Science: Current Contents/Physical, Chemical and Earth Sciences; Science Citation Index; Science Citation Index Expanded · WorldCat (OCLC) · X-MOL · Yewno Discover

ISSN 0033-8230 · e-ISSN 2193-3405

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at <http://www.degruyter.com/ract>

**EDITOR-IN-CHIEF** Professor Dr. Dr. h. c. mult. S. M. Qaim, Forschungszentrum Jülich GmbH, Institut für Neurowissenschaften und Medizin, INM-5: Nuklearchemie, 52425 Jülich, Germany, e-mail: [s.m.qaim@fz-juelich.de](mailto:s.m.qaim@fz-juelich.de)

**EDITORS** Professor Dr. T. E. Albrecht-Schönzart, Department of Chemistry, Nuclear Science and Engineering Center, Colorado School of Mines, 1500 Illinois St., Golden, Colorado 80401, USA, e-mail: [tschoenzart@mines.edu](mailto:tschoenzart@mines.edu)

Professor Dr. Z. Chai, Chinese Academy of Sciences, Institute of High Energy Physics, Laboratory of Nuclear Analysis, P.O. Box 918, 100039 Beijing, China, e-mail: [chaizf@mail.ihep.ac.cn](mailto:chaizf@mail.ihep.ac.cn)

Professor Dr. Ch. E. Düllmann, Johannes Gutenberg-Universität Mainz, Department Chemie - Standort TRIGA, Fritz-Strassmann-Weg 2, e-mail: [duellman@uni-mainz.de](mailto:duellman@uni-mainz.de)

Professor Dr. S. S. Jurisson, University of Missouri, Chemistry Department, Columbia, MO 65211, USA, e-mail: [jurissons@missouri.edu](mailto:jurissons@missouri.edu)

Dr. C. Le Naour, IJCLAB, 15 rue Georges Clémenceau, 91405 Orsay cedex, France, e-mail: [lenaour@ipno.in2p3.fr](mailto:lenaour@ipno.in2p3.fr)

Professor Dr. Prasanta K. Mohapatra, Radiochemistry Division, Bhabha Atomic Research Centre, Mumbai-400085, India, e-mail: [mpatra@barc.gov.in](mailto:mpatra@barc.gov.in)

Professor Dr. A. Yokoyama, Faculty of Chemistry, Institute of Science and Engineering, Kanazawa University, Kanazawa, Ishikawa 920-1192, Japan, e-mail: [yokoyama@se.kanazawa-u.ac.jp](mailto:yokoyama@se.kanazawa-u.ac.jp)

**PUBLISHER** Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

**JOURNAL COORDINATOR** Birgit Zoglmeier, De Gruyter, Neumarkterstr. 28, 81673 München, Germany.

Tel.: +49 (0)89 769 02-426, Fax: +49 (0)89 769 02-491, e-mail: [Birgit.Zoglmeier@degruyter.com](mailto:Birgit.Zoglmeier@degruyter.com)

**ADVERTISEMENTS** e-mail: [anzeigen@degruyter.com](mailto:anzeigen@degruyter.com)

© 2024 Walter de Gruyter GmbH, Berlin/Boston, Germany

**TYPESETTING** TNQ Tech Private Limited, Chennai, India

**DRUCK** Franz X. Stickle Druck und Verlag e.K., Ettenheim



## Contents

### Original Papers

Haladhara Naik, Ram Janam Singh, Srikant Pandurang Dange and Wooyoung Jang

**Independent isomeric yield ratios of fission products in the epi-cadmium neutron-induced fission of  $^{245}\text{Cm}$  — 817**

Qing Zhou, Yanjun Du, Zihao Feng, Qi Ren, Yang Wang, Xiaoyong Chen, Yang Li and Yun Wang

**Preparation of  $\text{MnO}_2$  modified winter melon-derived biochar for enhanced adsorption of  $\text{U(VI)}$  from aqueous solution — 827**

Maha Ali Youssef, Gehan Abdel Rahman Sadek Dakroury and Hisham Soliman Hassan

**Separation studies of  $^{60}\text{Co}$  (II) and  $^{134}\text{Cs}$  (I) radionuclides from aqueous solution using starch-grafted citric acid-acrylamide/magnesia hydrogel — 841**

Ping Bao, Yipeng Zhou, Xiaowei Wang, Jinfeng Men, Chengqiang Liang and Hao Ding

**Study on the adsorption performance of zeolite imidazole frameworks materials for  $\text{Co(II)}$  and  $\text{Mn(II)}$  in solution — 857**

Mohamed A. Gizawy, Hesham A. Shamsel-Din, Mohsen M. T. El-Tahawy and Ayman A. Ibrahim

**Synthesis, in silico and biodistribution studies of a novel  $^{47}\text{Sc}$ -radiolabeled  $\alpha$ -amino acid ester derivative attached to pyrazine and tetrazole rings for tumor targeted radiotherapy — 869**

Leyla Akbari, Sedigheh Sina, Samaneh Zolghadri, Ali Moghaddasi, Kamal Hadad and Hassan Yousefnia

**$^{113\text{m}}\text{In}$ ]-PSMA: high potential agent for SPECT imaging of prostate cancer — 883**

Artem A. Danshin and Alexey A. Kovalishin

**Physicochemical model of uranium hexafluoride ( $\text{UF}_6$ ) radiolysis under action of alpha particles — 895**

Jacy K. Conrad, Michael E. Woods and Gregory P. Horne

**Identification and time evolution of thionyl chloride ( $\text{SOCl}_2$ ) radiolysis products — 907**

Gözde Tektaş and Buket Canbaz Öztürk

**Measurement of gross alpha radioactivity levels and estimation of annual effective dose in hazelnut kernels — 915**

Mahsa Sedighi, Elham Edalatkhah and Payvand Taherparvar

**Characterization of ferrous-xlenol orange-polyvinyl alcohol gel for gamma dosimetry using spectroscopy — 923**