

Environmental Science Water Research & Technology

rsc.li/es-water

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 2053-1400 CODEN ESWRAR 9(6) 1549-1752 (2023)



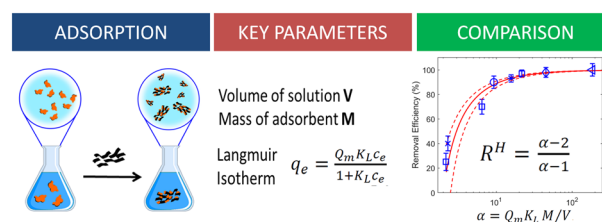
Cover
See Nikitha Inarmal and Brenda Moodley, pp. 1566–1576. Image reproduced by permission of Brenda Moodley from *Environ. Sci.: Water Res. Technol.*, 2023, 9, 1566.

PERSPECTIVE

1558

The removal efficiency of emerging organic contaminants, heavy metals and dyes: intrinsic limits at low concentrations

Sara Khaliha, Derek Jones, Alessandro Kovtun,*
Maria Luisa Navacchia, Massimo Zambianchi,
Manuela Melucci and Vincenzo Palermo

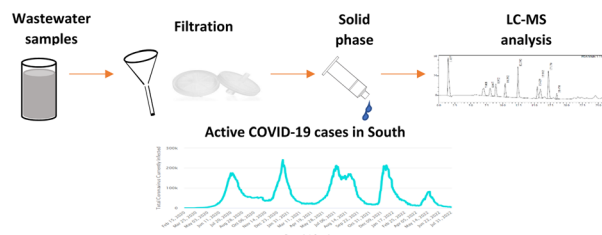


PAPERS

1566

Selected pharmaceutical analysis in a wastewater treatment plant during COVID-19 infection waves in South Africa

Nikitha Inarmal and Brenda Moodley*



Editorial Staff**Executive Editor**

Neil Scriven

Deputy Editor

Grace Thoburn

Development Editor

Nour Tanbouza

Editorial Production Manager

Claire Darby

Publishing Editors

Emma Carlisle, Hannah Hamilton, Claire Hedgecott, Irene Sanchez Molina Santos, Michael Spencelayh, Callum Woof, Lauren Yarrow-Wright

Editorial Assistant

Kate Bando

Publishing Assistant

Linda Warncke

Publisher

Sam Keltie

For queries about submitted papers please contact Claire Darby, Editorial Production Manager, in the first instance. E-mail: eswater@rsc.org

For pre-submission queries please contact Neil Scriven, Executive Editor. E-mail: eswater-rsc@rsc.org

Environmental Science: Water Research & Technology (electronic: ISSN 2053-1419) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

All orders, with cheques made payable to the Royal Society of Chemistry, should be sent to the Royal Society of Chemistry Order Department, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK

Tel +44 (0)1223 432398; E-mail orders@rsc.org

2022 Annual (electronic) subscription price: £1808; US\$2984. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version will be charged VAT.

If you take an institutional subscription to any Royal Society of Chemistry journal you are entitled to free, site-wide web access to that journal. You can arrange access via Internet Protocol (IP) address at www.rsc.org/ip

Customers should make payments by cheque in sterling payable on a UK clearing bank or in US dollars payable on a US clearing bank.

Whilst this material has been produced with all due care, the Royal Society of Chemistry cannot be held responsible or liable for its accuracy and completeness, nor for any consequences arising from any errors or the use of the information contained in this publication. The publication of advertisements does not constitute any endorsement by the Royal Society of Chemistry or Authors of any products advertised. The views and opinions advanced by contributors do not necessarily reflect those of the Royal Society of Chemistry which shall not be liable for any resulting loss or damage arising as a result of reliance upon this material. The Royal Society of Chemistry is a charity, registered in England and Wales, Number 207890, and a company incorporated in England by Royal Charter (Registered No. RC000524), registered office: Burlington House, Piccadilly, London W1J 0BA, UK, Telephone: +44 (0) 207 4378 6556.

Advertisement sales:

Tel +44 (0) 1223 432246; Fax +44 (0) 1223 426017;

E-mail advertising@rsc.org

For marketing opportunities relating to this journal, contact marketing@rsc.org

Environmental Science Water Research & Technology

rsc.li/es-water

Environmental Science: Water Research & Technology seeks to showcase high quality research about fundamental science, innovative technologies, and management practices that promote sustainable water.

Editorial Board**Editor-in-Chief**

Paige Novak, University of Minnesota, USA

Associate Editors

Sebastià Puig Broch, Universitat de Girona, Spain

Wenhai Chu, Tongji University, China

Graham Gagnon, Dalhousie University, Canada

Stuart Khan, University of New South Wales, Australia

Linda Lawton, Robert Gordon University, UK

Lauren Stadler, Rice University, USA

Members

Takahiro Fujioka, Nagasaki University, Japan

Xia Huang, Tsinghua University, China

Karin Jonsson, Lund University, Sweden

Ligy Philip, IIT Madras, India

Eveline Volcke, Ghent University, Belgium

Advisory Board

Federico Aulenta, National Research Council, Italy

Nicholas Ashbolt, University of Alberta, Canada

Tom Bond, University of Surrey, UK

Joby Boxall, The University of Sheffield, UK

Kartik Chandran, Columbia University in the City of New York, USA

Amy Childress, University of Southern California, USA

David M. Cwierny, University of Iowa, USA

Dionysios Dionysiou, University of Cincinnati, USA

Joel Ducoite, North Carolina State University, USA

Jingyun Fang, Sun yat-sen University, China

Maria Jose Farre, Catalan Institute for Water Research, Spain

Yujie Feng, Harbin Institute of Technology, China

Kathrin Fenner, Swiss Federal Institute of Aquatic Science and Technology, Eawag, Switzerland

Ramesh Goel, University of Utah, USA

Ola Gomaa, National Center for Radiation Research and Technology, Egypt

Chris Gordon, University of Ghana, Ghana

April Gu, Cornell University, USA

Jochen Hack, TU Darmstadt, Germany

Zhen "Jason" He, Washington University in St. Louis, USA

Cynthia Joll, Curtin University, Australia

Tamar Kohn, École Polytechnique Fédérale de Lausanne, EPFL, Switzerland

Tove Larsen, Swiss Federal Institute of Aquatic Science and Technology, Eawag, Switzerland

Peng Liang, Tsinghua University, China

Jun Ma, Harbin Institute of Technology, China

Julie Minton, WaterReuse Foundation, USA

Vincenzo Naddeo, University of Salerno, Italy

Indumathi M Nambi, Indian Institute of Technology Madras, India

Long Nghiem, University of Technology Sydney, Australia

Yong Sik Ok, Korea University, South Korea

Zhiyong "Jason" Ren, Princeton University, USA

Peter Robertson, Queen's University Belfast, UK

Michael Templeton, Imperial College London, UK

Kai Udert, Swiss Federal Institute of Aquatic Science and Technology, Switzerland

Subramanyan Vasudevan, CSIR-Central Electrochemical Research Institute, Karaikudi, India

David Weissbrodt, TU Delft, The Netherlands

Krista Wigginton, University of Michigan, USA

Aijie Wang, Research Center for Eco-Environmental Sciences, China

Xin Wang, Nankai University, China

Di Wu, Ghent University, South Korea

Defeng Xing, Harbin Institute of Technology, China

Jeyong Yoon, Seoul National University, South Korea

Information for Authors

Full details on how to submit material for publication in

Environmental Science: Water Research & Technology are given in the Instructions for Authors (available from <http://www.rsc.org/authors>).

Submissions should be made via the journal's homepage: rsc.li/es-water

Authors may reproduce/republish portions of their published contribution without seeking permission from the Royal Society of Chemistry, provided that any such republication is accompanied by an acknowledgement in the form: (Original Citation)–Reproduced by permission of the Royal Society of Chemistry.

This journal is © The Royal Society of Chemistry 2022.

Apart from fair dealing for the purposes of research or private study for non-commercial purposes, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988 and the Copyright and Related Rights Regulation 2003, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the Publishers or in the case of reprographic reproduction in accordance with the terms of licences issued by the Copyright Licensing Agency in the UK. US copyright law is applicable to users in the USA.

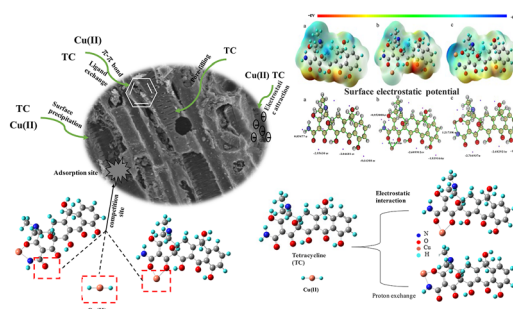
Registered charity number: 207890



1577

Co-adsorption of tetracycline and Cu(II) onto a novel amino-functionalized biochar: adsorption behavior and mechanism

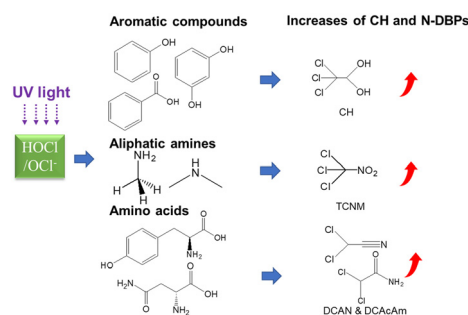
Yanru Zhang, Jiaqin Deng, Yunan Liu, Hui Li,*
Mengjiao Tan, Xiaoli Qin, Zijian Wu, Zhongliang Huang,
Xiaodong Li and Qiang Lu*



1587

Probing into the mechanisms of disinfection by-product formation from natural organic matter and model compounds after UV/chlorine treatment

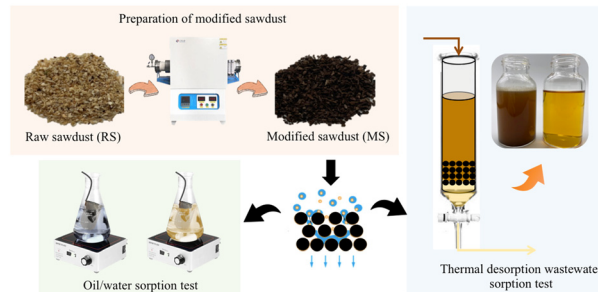
Ding Wang, Zhechao Hua, Yonglin Cui, Zijun Dong,
Chen Li and Jingyun Fang*



1599

Treatment of wastewater from the thermal desorption of oil-contaminated soil: performance and sorption mechanism of pyrolytic modified sawdust

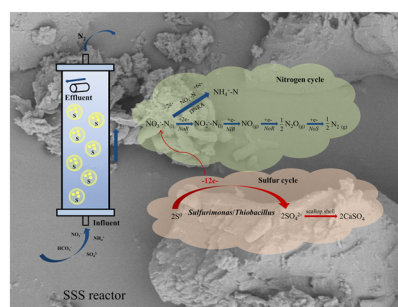
Feng Xiao, Ting Chen, Hui Cao, Huili Lin, Shan Jiang
and Jun Yin*



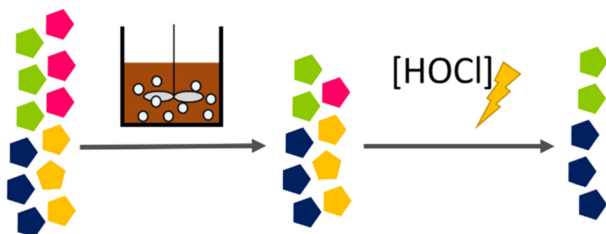
1610

Treatment of nitrate-contaminated groundwater using microbially enhanced permeable reactive barrier technology

Shengfeng Liu, Bai Gao,* Xingxing Xiong, Nan Chen,*
Keng Xuan,* Wenjie Ma, Yong Song and Yanling Yu



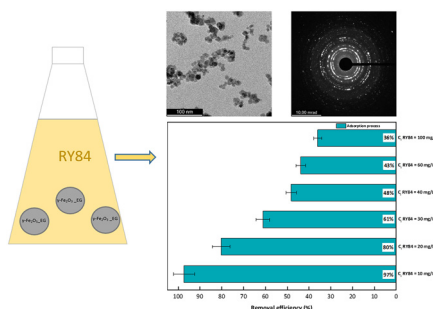
1620



Selective elimination of enterovirus genotypes by activated sludge and chlorination

Odile Larivé, Shotaro Torii, Nicolas Derlon and Tamar Kohn*

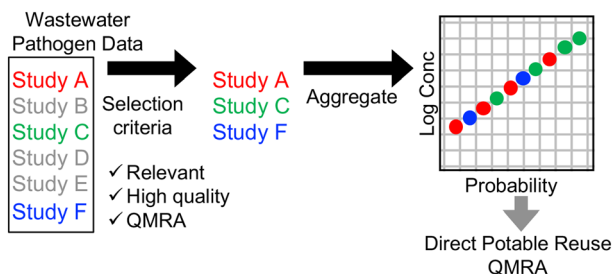
1634



Nanocrystalline structured ethylene glycol doped maghemite for persistent pollutants removal

Andreea Elena Maftai,* Imad Ahmed, Mariana Neamtu, Cristina Giorgia Coromelci, Maria Ignat and Loredana Brinza*

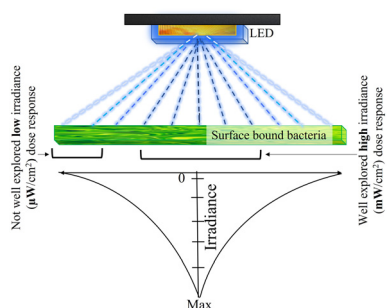
1646



Identifying and aggregating high-quality pathogen data: a new approach for potable reuse regulatory development

Emily Darby,* Adam Olivieri, Charles Haas, George Di Giovanni, Walter Jakubowski, Menu Leddy, Kara L. Nelson, Channah Rock, Theresa Slifko and Brian M. Pecson

1654



Low-irradiance inactivation kinetics of *Escherichia coli* during prolonged exposure to ultraviolet-C radiation

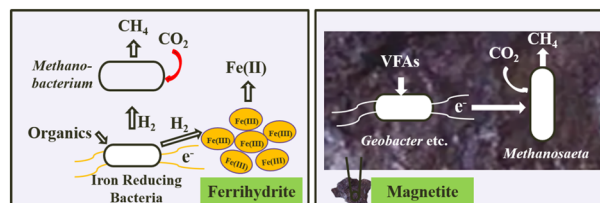
Muhammad Salman Mohsin, Katrina Fitzpatrick, Melisa Avdic, Joshua Fiorentino and Mariana Lanzarini-Lopes*



1663

Effects of different iron minerals on organics removal pathway and end-products during anaerobic digestion

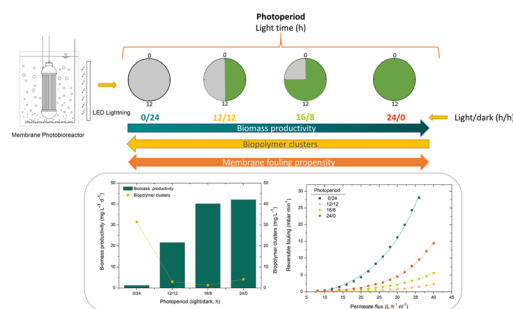
Yafei Yang, Hezhen Chen, Jiayi Liu, Bi Chen, Fan Yang, Li Wang, Yan Wang, Ming Dou and Junfeng Wan*



1672

Evaluation of membrane fouling in a microalgal-bacterial membrane photobioreactor treating secondary wastewater effluent: effect of photoperiod conditions

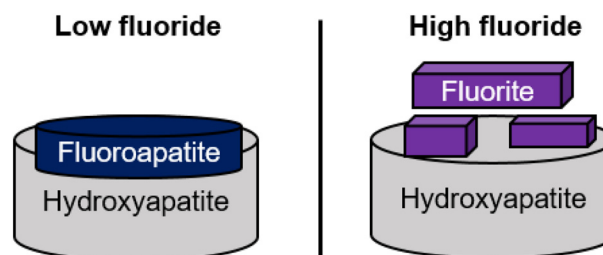
E. Segredo-Morales, E. González,* C. González-Martín and L. Vera



1683

Fluoride removal by calcite and hydroxyapatite

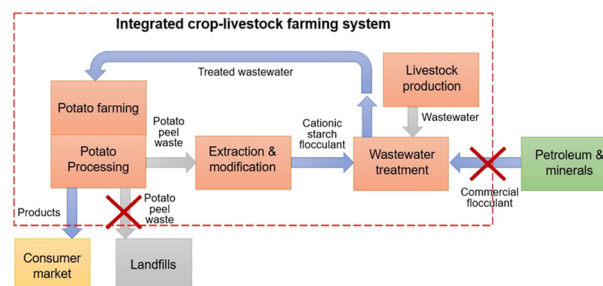
Claresta Joe-Wong, Andrea Alemán-Reyes, Nam Q. Le, K. Michael Salerno, James K. Johnson, Zhiyong Xia and Danielle R. Nachman*



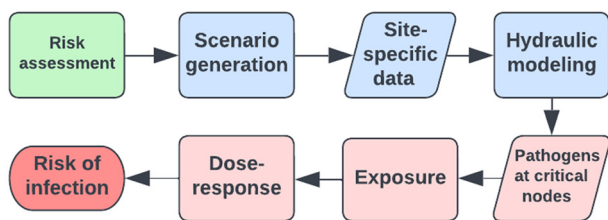
1690

Flocculation of livestock wastewater using cationic starch prepared from potato peels

Noor Haleem, Augustina Osabutey, Karlee Albert, Cheng Zhang,* Kyungnan Min, Gary Anderson and Xufei Yang*



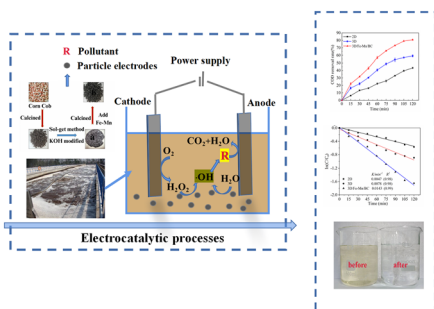
1701



Health risks due to intrusion into the drinking water distribution network: hydraulic modelling and quantitative microbial risk assessment

Michael Odhiambo, Victor Viñas, Ekaterina Sokolova* and Thomas J. R. Pettersson*

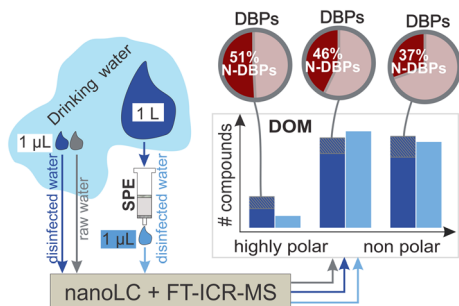
1717



Efficient degradation of COD from coking wastewater by corncob biochar-modified particles using a three-dimensional electrode reactor

Qiaoyun Zhu, Xueling Liu, Jingjing Xiang, Likun Li,* Benquan Fu, Yi Wang, Yanjun Huang, Guozhi Fan and Lei Zhang*

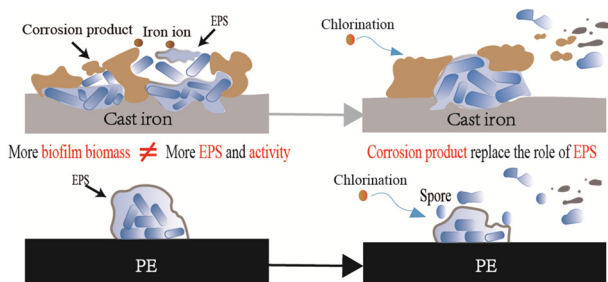
1729



Direct non-target analysis of dissolved organic matter and disinfection by-products in drinking water with nano-LC-FT-ICR-MS

Limei Han, Martin Lohse, Maolida Nihemaiti, Thorsten Reemtsma and Oliver J. Lechtenfeld*

1738



Assessment of the microbiological safety of drinking water in outdoor pipe materials: biofilm formation and chlorine resistance of typical bacteria

Zebing Zhu,* Siyang Xu, Yunyan Pei, Lili Shan,* Wanjun Zheng, Xiajun Bao and Yixing Yuan



CORRECTION

1750

Correction: Exploring potential dual-stage attention based recurrent neural network machine learning application for dosage prediction in intelligent municipal management

Xusheng Fang, Jian Zang,* Zhengang Zhai, Li Zhang, Ziyu Shu and Yuqi Liang

