

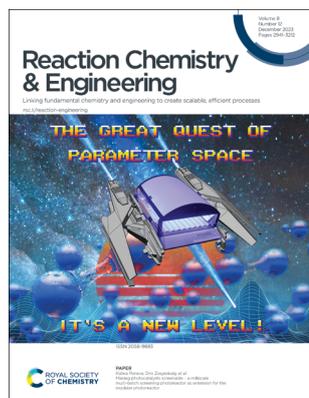
Reaction Chemistry & Engineering

Bridging the gap between chemistry and chemical engineering
rsc.li/reaction-engineering

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 2058-9883 CODEN RCEEBW 8(12) 2941-3212 (2023)



Cover

See Kalina Peneva, Dirk Ziegenbalg *et al.*, pp. 2967–2983.

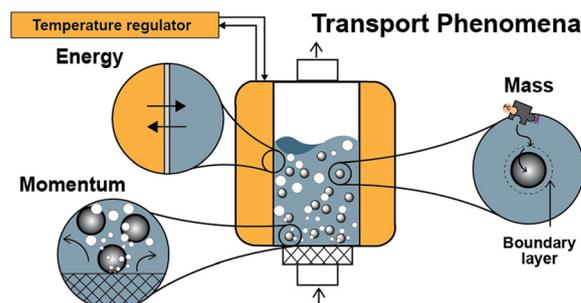
Image reproduced by permission of Daniel Kowalczyk from *React. Chem. Eng.*, 2023, 8, 2967.

REVIEW

2951

Transport phenomena in solid phase synthesis supported by cross-linked polymer beads

Sebastián Pinzón-López, Mathias Kraume, José Dangelad-Flores* and Peter H. Seeberger

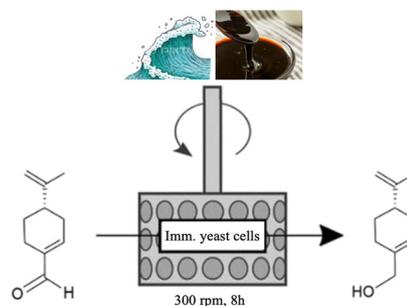


COMMUNICATION

2963

Boosting the catalytic performance of a marine yeast in a SpinChem® reactor for the synthesis of perillyl alcohol

Silvia Donzella, Concetta Compagno, Francesco Molinari, Francesca Paradisi* and Martina Letizia Contente*



Editorial Staff

Executive Editor

Maria Southall

Deputy Editor

Bianca Provost

Editorial Production Manager

Cara Sutton

Assistant Editors

Sean Browner, Molly Colgate, Paul Scott, Alison Winder

Editorial Assistant

Basita Javeed

Publishing Assistant

Allison Holloway

Publisher

Sam Keltie

For queries about submitted papers, please contact Cara Sutton, Editorial Production Manager in the first instance. E-mail: reactionchemeng@rsc.org

For pre-submission queries please contact Maria Southall, Executive Editor. E-mail: reactionchemeng-rsc@rsc.org

Reaction Chemistry & Engineering (electronic: ISSN 2058-9883) 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

2023 Annual (electronic) subscription price: £2584; \$4262. Customers in Canada will be subject to a surcharge to cover GST. Customers in the EU subscribing to the electronic version only 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

Reaction Chemistry & Engineering

rsc.li/reaction-engineering

Bridging the gap between chemistry and chemical engineering

Editorial Board

Editor-in-Chief

Klavs F Jensen, Massachusetts Institute of Technology, USA

Associate Editors

Ian R Baxendale, Durham University, UK
Richard Bourne, University of Leeds, UK

Saif A Khan, National University of Singapore, Singapore

Francesca Paradisi, University of Bern, Switzerland
Laura Torrente, University of Cambridge, UK
Haihui Wang, Tsinghua University, China

Members

Shane Grosser, Merck, USA
Petra de Jongh, Utrecht University, Netherlands
Heather Kulik, Massachusetts Institute of Technology, USA
Anita Maguire, University College Cork, Ireland
Megan Smyth, Almac Sciences

Advisory Board

Malcolm Berry, MB Chemistry Consulting Ltd, UK
Claude de Bellefon, University of Lyon, France

Donna G Blackmond, Scripps Research Institute, USA

Wayne Blaylock, Dow Chemical Company, USA

Cara Brocklehurst, Novartis AG, Switzerland

Jian-Feng Chen, Beijing University of Chemical Technology, China

Ya-Huei Chin, University of Toronto, Canada

Evelina Colacino, University of Montpellier, France

Avelino Corma, Polytechnical University of Valencia, Spain

Anna Croft, University of Nottingham, UK

Paul Dauenhauer, University of Minnesota, USA

Stevan Djuric, Abbvie, USA

Raj Gounder, Purdue University, USA

Raju Kumar Gupta, Indian Institute of Technology Kanpur, India

Dorota Gryko, Polish Academy of Sciences, Poland

Ryan Hartman, New York University, USA

Joel M Hawkins, Pfizer Worldwide R&D, USA

Ive Hermans, University of Wisconsin–Madison, USA

Volker Hessel, University of Adelaide, Australia

Lin Huang, Trunk & Petal Pte Ltd., Singapore

Marty Johnson, Eli Lilly, USA

Oliver Kappe, University of Graz, Austria

Alexander Katz, University of California, Berkeley, USA

Francesca Kerton, Memorial University, Canada

Beata Kilos-Réaume, Dow, USA

Dong Pyo Kim, POSTECH, Republic of Korea

Shu Kobayashi, University of Tokyo, Japan

Amol Kulkarni, National Chemical Research Laboratory, India

Alexei Lapkin, University of Cambridge, UK

Hélène Lebel, University of Montreal, Canada

Angeliki Lemonidou, Aristotle University of Thessaloniki, Greece

Guangsheng Luo, Tsinghua University, China

Hareesh Manyar, Queen's University Belfast, UK

Rebecca Meadows, AstraZeneca, UK

Massimo Morbidelli, Milano Politecnico, Italy

Timothy Noël, University of Amsterdam, Netherlands

Matthew O'Brien, Keele University, UK

Tatsuya Okubo, University of Tokyo, Japan

Polona Žnidarič Plazl, University of Ljubljana, Slovenia

Anastasios Polyzos, University of Melbourne, Australia

Jeffrey Rimer, University of Houston, USA

Rebecca Ruck, Merck & Co. Inc., Kenilworth, NJ, USA

Andrew Rutter, GlaxoSmithKline, UK

Basu Saha, Lancaster University, UK

Susannah Scott, UC Santa Barbara, USA

Doris Segets, University of Duisburg-Essen, Germany

Manish Sharma, BASF, USA

Jay Siegel, Tianjin University, China

Sing Sun, Lawrence Berkeley National Laboratory, USA

Annette Taylor, University of Sheffield, UK

Enrico Tronconi, University of Milan, Italy

Veronique Van Speybroeck, Ghent University, Belgium

Dionisios G Vlachos, University of Delaware, USA

Siegfried Waldvogel, Johannes Gutenberg Universität Mainz, Germany

Robin White, Luxembourg Institute for Science & Technology, Luxembourg

Karen Wilson, RMIT University, Australia

Sheryl L Wiskur, University of South Carolina, USA

Wen-De Xiao, Shanghai Jiao Tong University, China

Zhen Yao, Zhejiang University, China

Information for Authors

Full details on how to submit material for publication in Reaction Chemistry & Engineering 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/reaction-engineering. Submissions: The journal welcomes submissions of manuscripts for publication as Review Articles and Minireviews. Full Papers and Communications should describe original work of high quality and impact.

Additional details are available from the Editorial Office or <http://www.rsc.org/authors>

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 2023.

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.

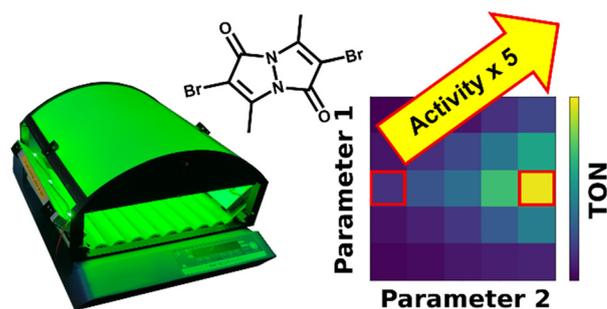
Registered charity number: 207890



2967

Making photocatalysts screenable – a milliscale multi-batch screening photoreactor as extension for the modular photoreactor

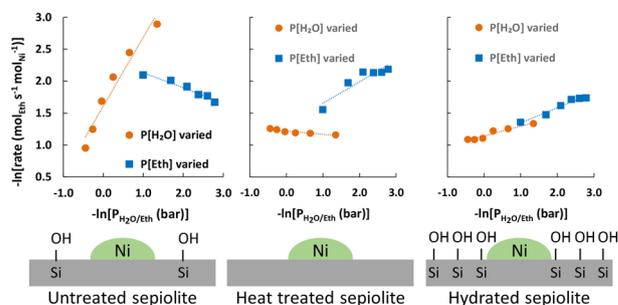
Daniel Kowalczyk, Gergely Knorr, Kalina Peneva* and Dirk Ziegenbalg*



2984

Investigation of support effects during ethanol steam reforming over a Ni/sepiolite catalyst

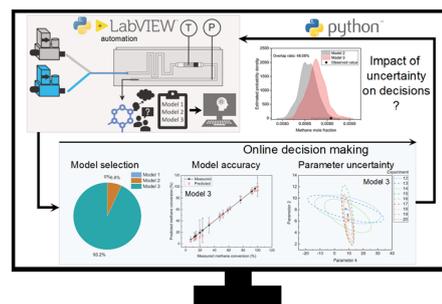
Marinela D. Zhurka, James A. Anderson, Alan J. McCue, Angeliki A. Lemonidou and Panagiotis N. Kechagiopoulos*



3000

Autonomous kinetic model identification using optimal experimental design and retrospective data analysis: methane complete oxidation as a case study

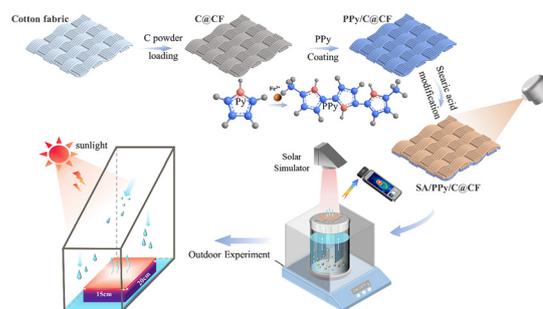
Arun Pankajakshan, Solomon Gajere Bawa, Asterios Gavriilidis* and Federico Galvanin*



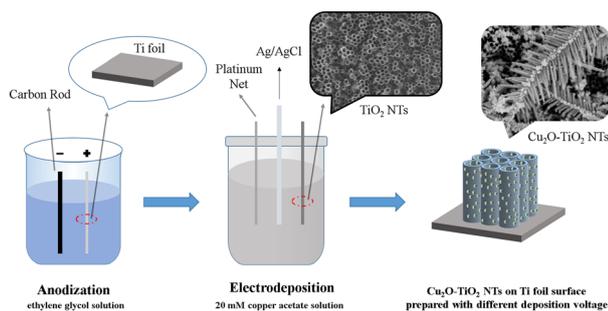
3018

Salt-tolerant, scalable Janus fabric evaporators for desalination and multi-species wastewater purification

Zhi-Jie Zhang, Zhi-Bo Zhang, Jun Zeng, Shan Ma, Min Chen, Dan Zhou, Yong Yan, Zhi Chen,* Cong-Ming Tang and Jun-Qiang Xu



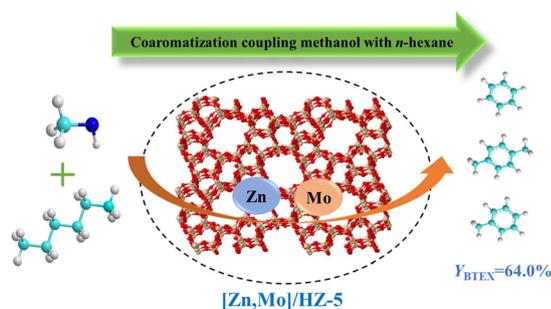
3028



Fabrication of Cu_2O -loaded TiO_2 nanotubes with heterojunctions *via* an electrochemical method: enhanced photocatalytic activity

Peng Qiao, Xueqin Wang,* Jiangling Liu, Yanxiu Liu,* Man Dai, Rui Piao, Ying Liu, Wenyi Wang, Yuanyuan Wang and Hua Song

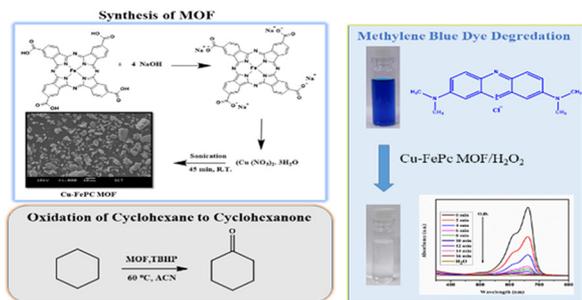
3037



Influence of Mo modification on coaromatization coupling methanol with *n*-hexane over $[\text{Zn},\text{Mo}]/\text{HZSM-5}$ catalysts

Bing Zhu, Haibo Li, Xue Wang, Subing Fan,* Junmin Lv and Tian-sheng Zhao*

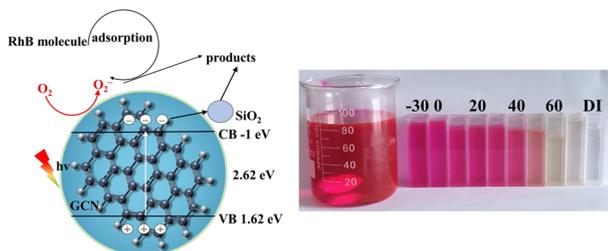
3046



Green synthesis of the copper and iron phthalocyanine-based metal-organic framework as an efficient catalyst for methylene blue dye degradation and oxidation of cyclohexane

Rupali S. Bhise, Yogesh A. Patil and Ganapati S. Shankarling*

3060



Efficient photocatalytic degradation of ultra-high concentration printing and dyeing wastewater using a SiO_2/GCN nanocomposite

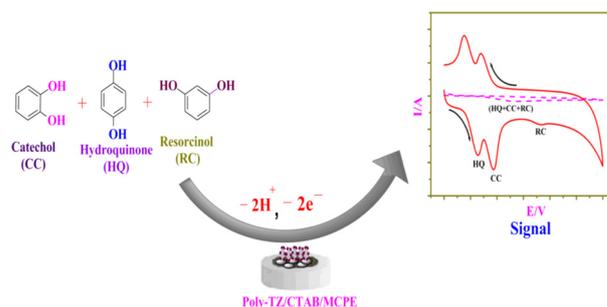
Jinyuan Zhu, Yingying Zhu,* Yifan Zhou, Chaoran Li, Geng Chen and Xinbao Li



3071

Synergetic effects of a poly-tartrazine/CTAB modified carbon paste electrode sensor towards simultaneous and interference-free determination of benzenediol isomers

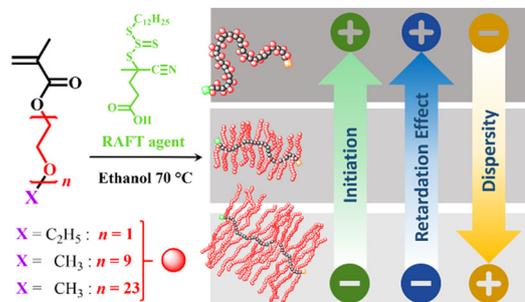
Amit B. Teradale, Kailash S. Chadchan, Pattan-Siddappa Ganesh, Swastika N. Das* and Eno E. Ebenso



3082

PEGMA_s with short and long side chains: what is the effect in the formation of stars and brushes by RAFT polymerization?

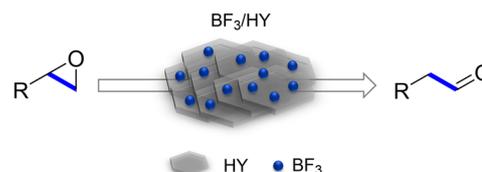
Priscila Quiñonez-Angulo, Claude St. Thomas, Hortensia Maldonado-Textle, Ángel Licea-Claverie, Enrique Saldívar-Guerra and Iván Zapata-González*



3096

BF₃/HY as a microporous solid acid catalyst for regioselective ring-opening of epoxides

Yi-Xuan Yao, Hong-Wei Zhang, Chang-Bo Lu, Xue Wang, Shi-Dong Zhao, Hong-Yan Shang* and Yuan-Yu Tian*

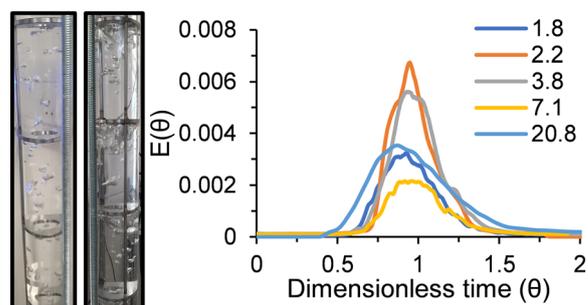


- ✓ microporous solid acid catalyst
- ✓ recyclability and stability
- ✓ high selectivity for aldehydes
- ✓ 25 examples up to 99% yield

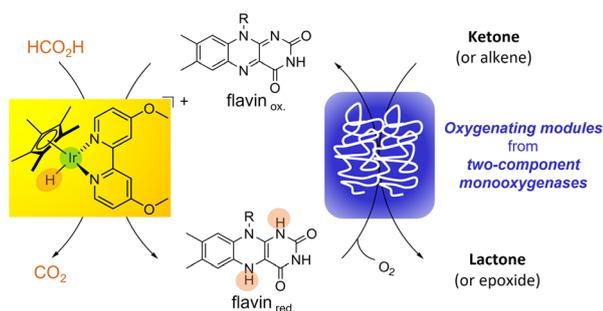
3104

Characterising flow with continuous aeration in an oscillatory baffle flow reactor using residence time distribution

Rylan Cox,* Konstantinos Salonitis, Susan A. Impey and Evgeny Rebrov



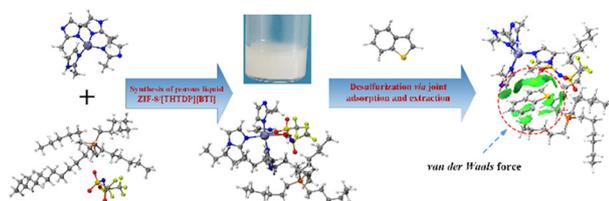
3117



Hybrid catalysis for enantioselective Baeyer–Villiger oxidation and stereoselective epoxidation: a Cp^*Ir complex to fuel FMN and FAD reduction for flavoprotein monooxygenase modules

Robert Röllig,* Caroline E. Paul, Pierre Rousselot-Pailley, Selin Kara* and Véronique Alphand*

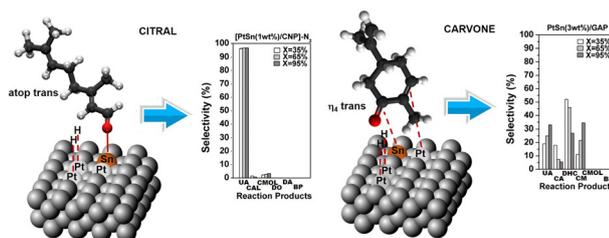
3124



Desulfurization of diesel via joint adsorption and extraction using a porous liquid derived from ZIF-8 and a phosphonium-type ionic liquid

Chenhua Shu,* Min Zhao, Hua Cheng, Yajie Deng, Pierre Stiernet, Niklas Hedin and Jiayin Yuan*

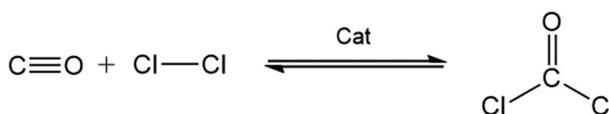
3133



Hydrogenation of citral and carvone on Pt and PtSn supported metallic catalysts. A comparative study on the regioselectivity and chemoselectivity

Gustavo Enrique Ramos Montero,* Julieta Paola Stassi, Sergio Rubén de Miguel and Patricia Daniela Zgolicz

3150



Operational parameters relevant to the examination of phosgene synthesis catalysis

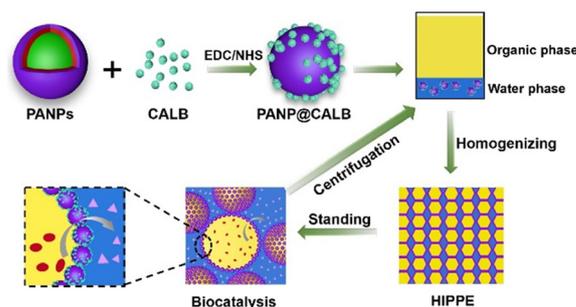
Rory Hughes, Giovanni E. Rossi and David Lennon*



3162

Enzyme-modified amphiphilic polymer nanoparticles as high-performance Pickering interface biocatalysts

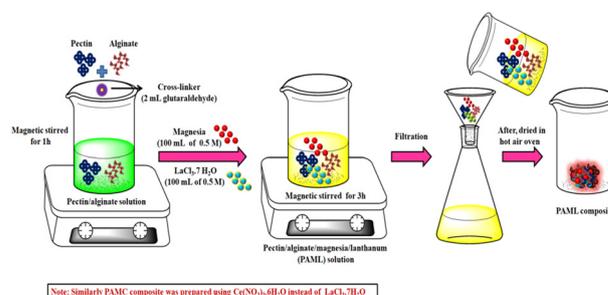
Zhengqiao Yin, Chuangbang Xu, Bowei Liu, Xiucui Liu and Shengmiao Zhang*



3171

Micro-encapsulation of rare earth metal ion-doped magnesia-based alginate/pectin hybrid polymeric composites for defluoridation of water

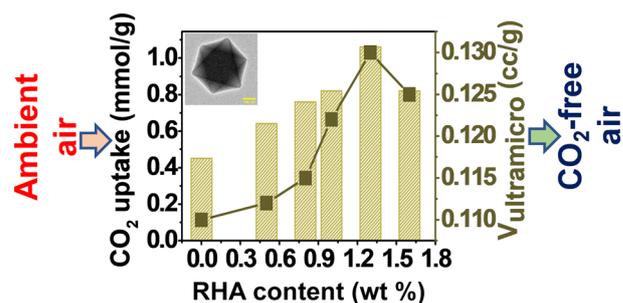
Antonyamy Jeyaseelan, Natrayasamy Viswanathan,* Ilango Aswin Kumar and Mohammad Rafe Hatshan



3185

Direct CO_2 capture from simulated and ambient air over silica-rich MIL-101(Cr)

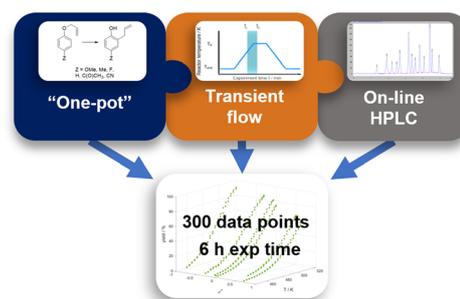
Vaishnavi Kulkarni and Sanjay Kumar Singh*



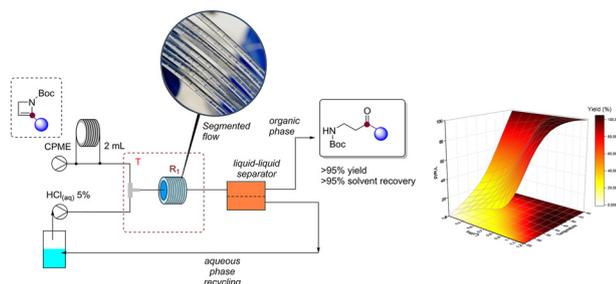
3196

An efficient multiparameter method for the collection of chemical reaction data via ‘one-pot’ transient flow

Linden Schrecker, Joachim Dickhaut, Christian Holtze, Philipp Staehle, Andy Wieja, Klaus Hellgardt and King Kuok (Mimi) Hii*



3203



Sustainable continuous flow synthesis of β -aminocarbonyls via acid-catalyzed hydration of *N*-Boc-2-azetines

Michael Andresini, Marco Colella, Roberta Savina Dibenedetto, Elena Graziano, Giuseppe Romanazzi, Andrea Aramini, Leonardo Degennaro* and Renzo Luisi*

CORRECTION

3210

Correction: Investigation of support effects during ethanol steam reforming over a Ni/sepiolite catalyst

Marinela D. Zhurka, James A. Anderson, Alan J. McCue, Angeliki A. Lemonidou and Panagiotis N. Kechagiopoulos*

