

# Reaction Chemistry & Engineering

Bridging the gap between chemistry and chemical engineering

[rsc.li/reaction-engineering](https://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 10(2) 269-490 (2025)



### Cover

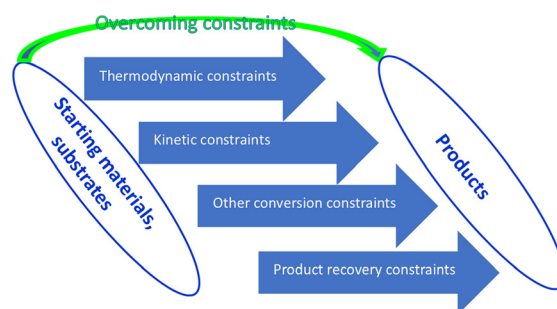
See Sho Kataoka *et al.*,  
pp. 311–319.  
Image reproduced by  
permission of Sho Kataoka  
from *React. Chem. Eng.*,  
2025, 10, 311.

## REVIEW

278

### Overcoming bottlenecks towards complete biocatalytic conversions and complete product recovery

Roland Wohlgemuth\*

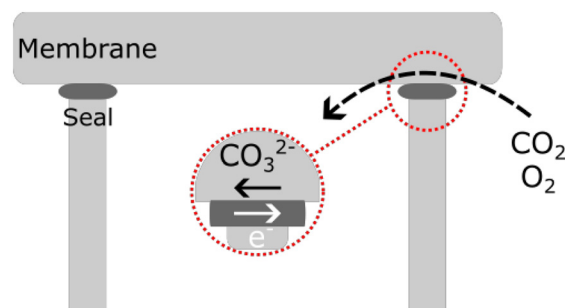


## COMMUNICATIONS

294

### Metallic sealants increase flux and change selectivity in supported molten-salt membranes

Liam A. McNeil, Guannan Chen, Wenting Hu,  
Evangelos I. Papaioannou, Ian S. Metcalfe  
and Greg A. Mutch\*



# Royal Society of Chemistry approved training courses

Explore your options.  
Develop your skills.  
Discover learning  
that suits you.

**Courses in the classroom,  
the lab, or online**

Find something for every  
stage of your professional  
development. Search our  
database by:

- subject area
- location
- event type
- skill level

Members **get at least 10% off**

Visit [rsc.li/cpd-training](https://rsc.li/cpd-training)

**SAVE  
10%**

Registered charity number: 207890

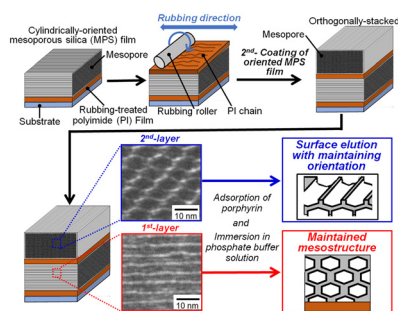


## COMMUNICATIONS

300

### Nanostructural investigation of orthogonally stacked mesoporous silica films and their reactivity with phosphate buffer

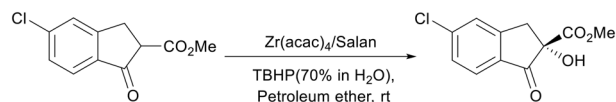
Reo Kimura, Yadong Chai, Rin Nakajima, Kenichiro Kosugi and Motohiro Tagaya\*



306

### Efficient and convenient synthesis of methyl (S)-5-chloro-2-hydroxy-1-oxo-2,3-dihydro-1H-indene-2-carboxylate: a key intermediate for (S)-indoxacarb using aqueous TBHP as oxidant

Yun Zhang, Yao Du, Yan-Biao Chen, Jia-Huan Nie, Yue Xiong, Bao-Dong Cui, Xue-Qing Mou, Ming-Qiang Zhou\* and Yong-Zheng Chen\*



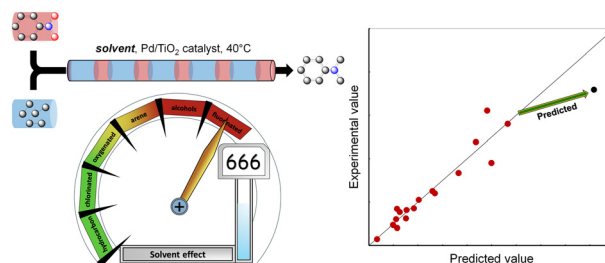
✓ Industrially feasible ✓ Purification by filtration  
✓ TBHP (70% in H<sub>2</sub>O) as oxidant ✓ Excellent yield and enantioselectivity

## PAPERS

311

### A solvent-selection strategy for the hydrogenation reaction inside a tubular-flow reactor through a statistical approach

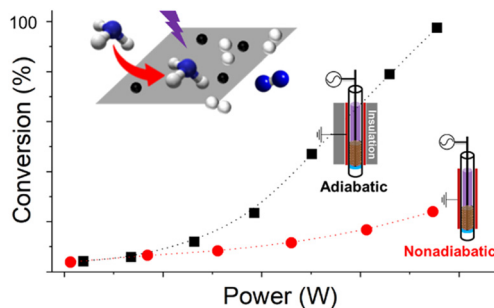
Benny Wahyudianto, Takehiro Yamaki, Nobuo Hara, Yoshihiro Takebayashi and Sho Kataoka\*



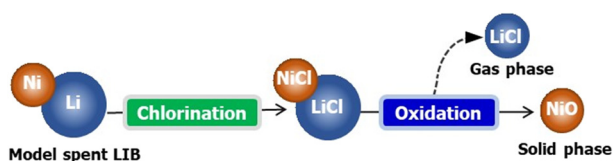
320

### Ammonia decomposition over low-loading ruthenium catalyst achieved through “adiabatic” plasma reactor

Minhazur Rahman Shawon, Chinwendu Umeojiakor, Anthony Griffin, Jeffrey Aguinaga, Jiachun Wu, Derek Patton, Zhe Qiang, Hossein Toghiani and Yizhi Xiang\*



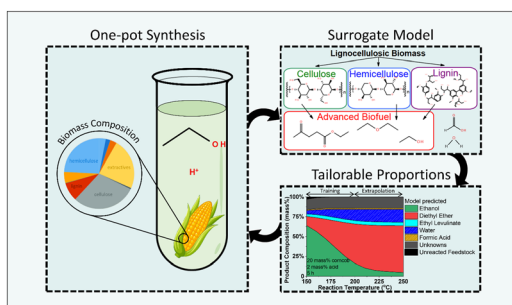
332



### Selective separation of Li, Ni, Co and Mn from model spent Li ion battery cathode materials by dry processing using the combination of chlorination and oxidation

Yuuki Mochizuki and Naoto Tsubouchi\*

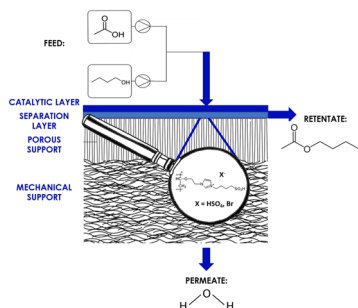
344



### A hierarchical surrogate approach to biomass ethanolysis reaction kinetic modelling

Ailís O'Shea,\* Conall McNamara, Prajwal Rao, Mícheál Howard, Mohammad Reza Ghanni and Stephen Dooley

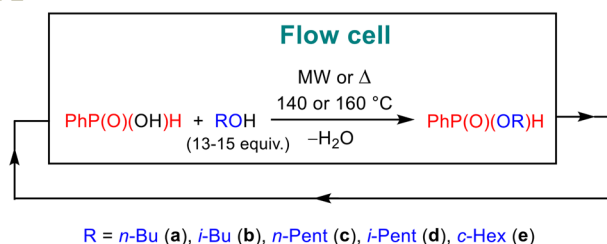
360



### Acid-functionalized PVA composite membranes for pervaporation-assisted esterification

Julia Piotrowska, Christian Jordan, Kristof Stagel, Marco Annerl, Jakob Willner, Andreas Limbeck, Michael Harasek\* and Katharina Bica-Schröder\*

371



### The scale-up of microwave flow syntheses by recirculation: the chlorine-free preparation of alkyl phenyl-*H*-phosphinates

József Schindler, Dorka Nagy, Rebeka Harján and György Keglevich\*

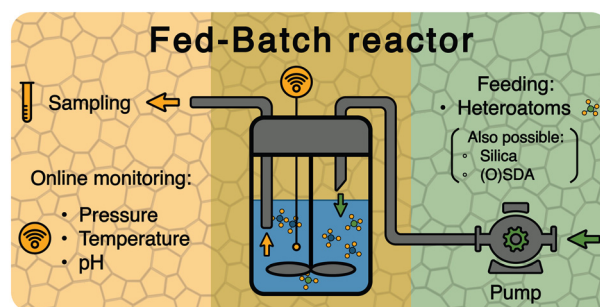


## PAPERS

379

### Monitoring and controlling zeolite synthesis via reactor-based solutions: a fed-batch strategy

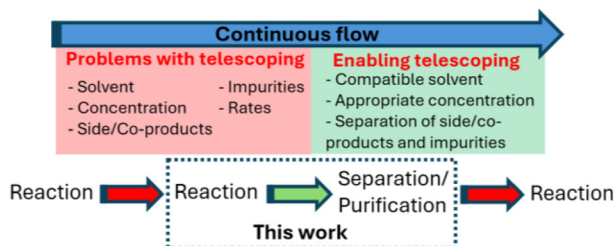
Amirhossein Javdani, Gleb Ivanushkin, Aron Deneyer and Michiel Dusselier\*



392

### Integrating continuous flow reaction and work-up: chiral amine resolution, separation and purification using a novel coalescing filter system

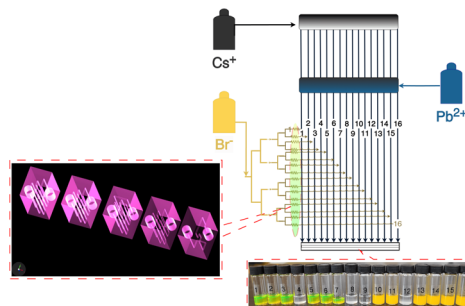
Bethan M. Rowley, Lisa A. Thompson, Luke A. Power, James Daglish, Emma Parks, James Birbeck, Steve Marsden, Nikil Kapur and A. John Blacker\*



398

### High-throughput reaction discovery for Cs–Pb–Br nanocrystal synthesis

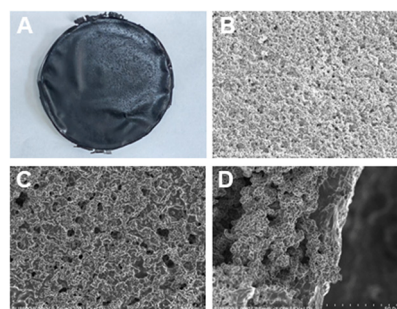
Ricki Chairil, Allison P. Forsberg, Richard L. Brutchey\* and Noah Malmstadt\*



407

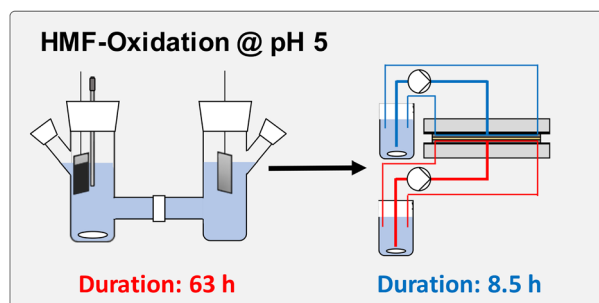
### Carboxymethyl cellulose–poly-*m*-phenylenediamine composite membrane for gold recovery from e-waste

Zhiwei Huang, Yaxin Yuan, Xinyi Li, Yiyang Li, Min Wang\* and Zhuqing Wang\*





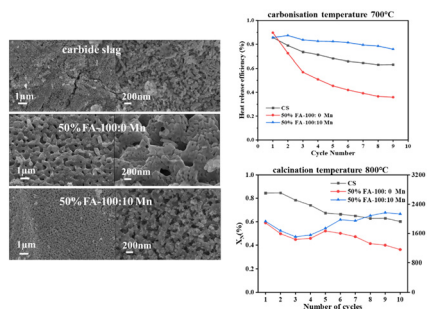
417



### Usage of CoOOH electrodes in a flow channel reactor for the non-alkaline oxidation of 5-(hydroxymethyl)-furfural: an upscaling study

Marten Niklas Gey, Carl Schneider and Uwe Schröder\*

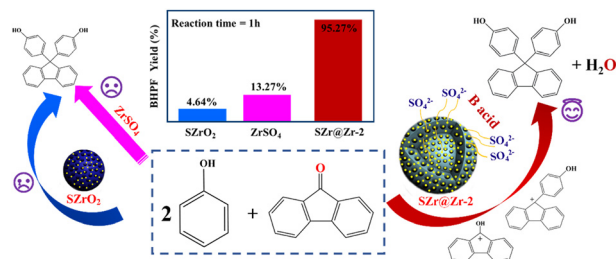
428



### Energy-storage materials with stable structure through carbide slag modification by acid impregnation and manganese doping

Caiyun Gao,\* Xiangli Liu, Yuan Zhang, Fei Jin and Dong Li

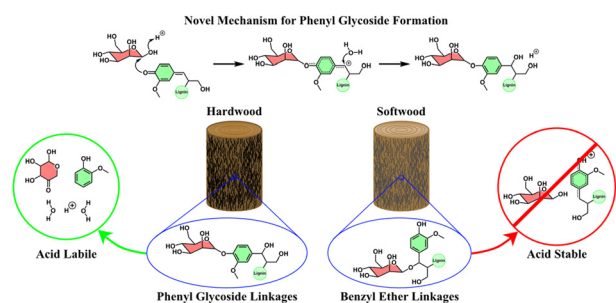
440



### Modulating the crystal phase of Zr-based solid acid catalysts to boost the synthesis of 9,9-bis(4-hydroxyphenyl)fluorene

Jingjie Li, Lin Wang, Yanfeng Pu,\* Yong Liu, Xiyang Li, Renren Sun and Yahui Xiao\*

453



### Mechanistic insights into the formation and deconstruction of phenyl glycoside linkages in lignocellulosic biomass

Seth Beck and Samir H. Mushrif\*

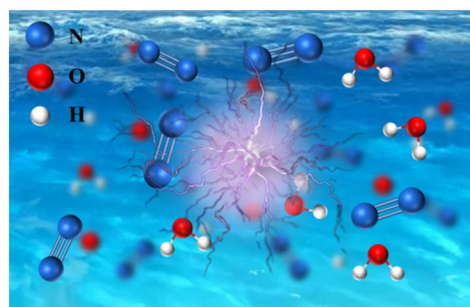


## PAPERS

466

### Competition between ammonia and nitrogen oxides during nitrogen fixation using $\text{N}_2$ and $\text{H}_2\text{O}$ plasma without catalysis

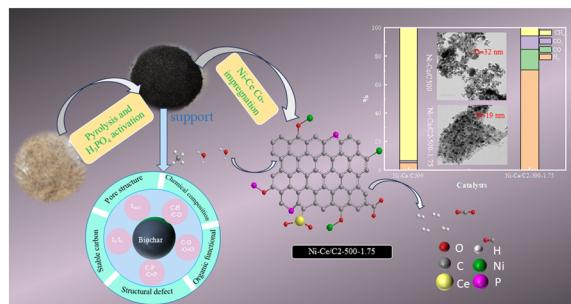
Yuanyuan Wang, Bing Sun,\* Zhonglin Yu, Shaohua Sun, Jinglin Liu, Yanbin Xin and Xiaomei Zhu



477

### Metallic nickel-anchored biochar with non-metallic heteroatom modification: remarkably effective catalyst for steam reforming of methane

Yu-e Zhao, Jinxiao Li,\* Ao Xu, Yulong Liu, Minghui Lian, Jing Zhang, Hexiang Zhong, Chunhua Yang, Rensheng Song and Liwei Pan\*



## CORRECTION

488

### Correction: Combination of near-infrared spectroscopy and a transient flow method for efficient kinetic analysis of the Claisen rearrangement

Yoshihiro Takebayashi,\* Kiwamu Sue and Sho Kataoka

