

# 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 10(1) 1-268 (2025)



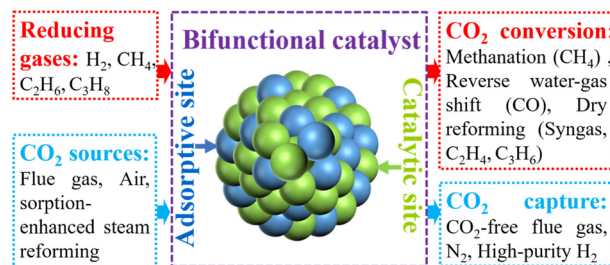
**Cover**  
See Ajin Rajan and Jithin John Varghese, pp. 27-37.  
Image reproduced by permission of Jithin John Varghese from *React. Chem. Eng.*, 2025, 10, 27.

## MINI REVIEW

10

### Bifunctional catalysts for the coupling processes of CO<sub>2</sub> capture and conversion: a minireview

Chengxiong Dang and Hao Yu\*

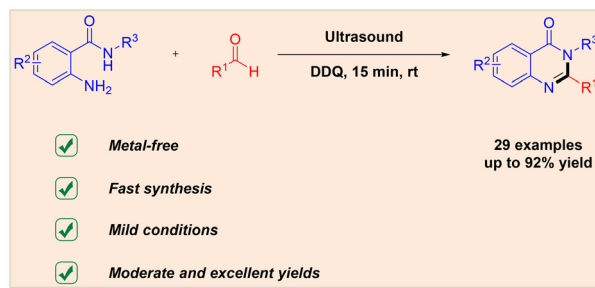


## COMMUNICATION

22

### Ultrasound-assisted condensation cyclization reaction: fast synthesis of quinazolinones from o-aminobenzamides and aldehydes under ambient conditions

Xuerou Chen, Siqi Li, Shilong Sun and Wuji Sun\*





# Advance your career in science

with professional recognition that showcases your **experience, expertise and dedication**

## Stand out from the crowd

Prove your commitment to attaining excellence in your field

## Gain the recognition you deserve

Achieve a professional qualification that inspires confidence and trust

## Unlock your career potential

Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

## Apply now

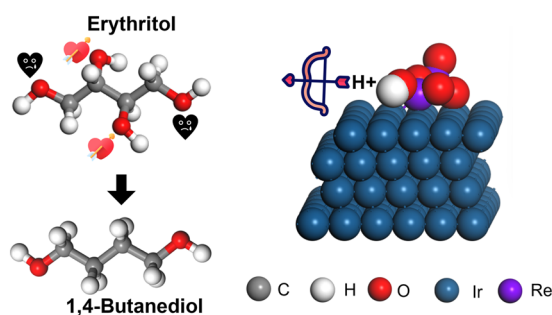
[rsc.li/professional-development](https://rsc.li/professional-development)



27

### Mechanistic insights into C–O bond cleavage in erythritol during hydrodeoxygenation on an Ir–ReO<sub>x</sub> catalyst

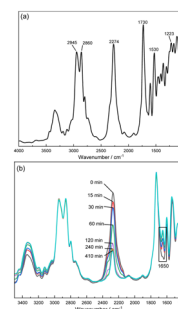
Ajin Rajan and Jithin John Varghese\*



38

### The kinetics of the polyurethane moisture curing reaction: a combined experimental and DFT mechanistic study

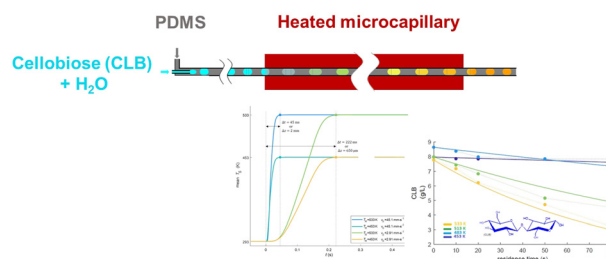
Jie Zhou, Zhen Liu, Zhihua Zhu, Zuoxiang Zeng and Li Sun\*



48

### Microfluidic reactor development for isothermal kinetic measurements of sugar hydrolysis and global kinetics determination by the model-fitting approach

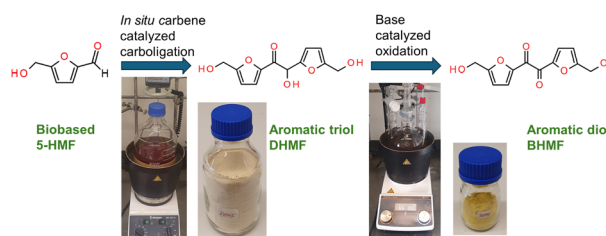
Saartjie M. Gouws, Julien Brocus, Laurent Cassayre, Jean-Jacques Letourneau and Marion Carrier\*



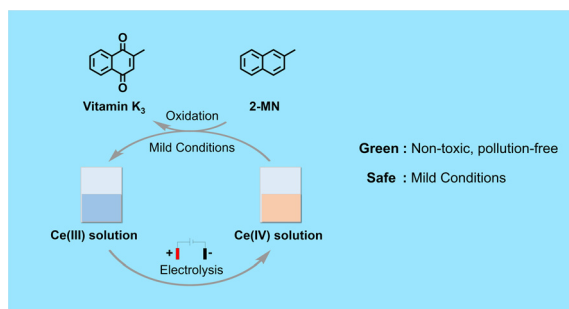
70

### C12 aromatic triol-furoin and diol-furil from bio-based 5-(hydroxymethyl)furfural: enhanced selective synthesis, scale-up and mechanistic insight into cyclic catalysis

Thi Tuyet Thuy Vu, Shentan Liu,\* Mantas Jonušis, Simona Jonušienė, Jinsik Choi, Mohamed Ismail, Nicola Rehnberg, Rajni Hatti-Kaul and Sang-Hyun Pyo\*



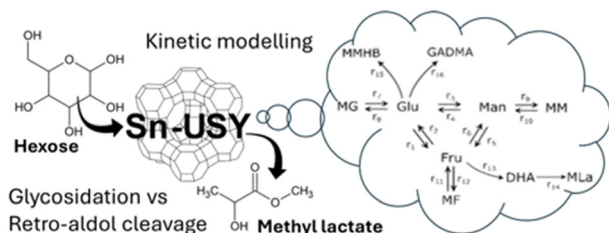
79



### Technoeconomic analysis of fine chemical electro-synthesis: a case study using electrooxidation of 2-methylnaphthelene to vitamin K<sub>3</sub>

Qifeng Yang, Liping Liang, Ning Xu, Yang Li, Zhihui Wang, Dadong Shen and Yiming Mo\*

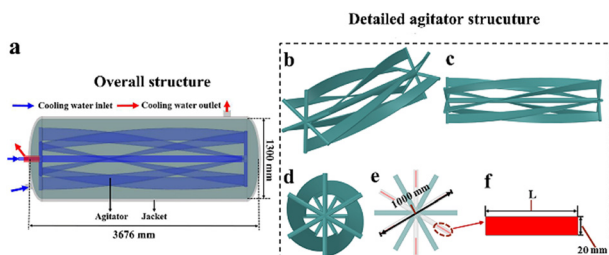
90



### Kinetics of the valorization of hexoses with Sn-USY catalysts in methanolic media: glycosidation vs. retroaldol cleavage

J. M. Jimenez-Martin, M. El Tawil-Lucas, C. García-Jerez, J. Moreno, A. García, B. Hernández and J. Iglesias\*

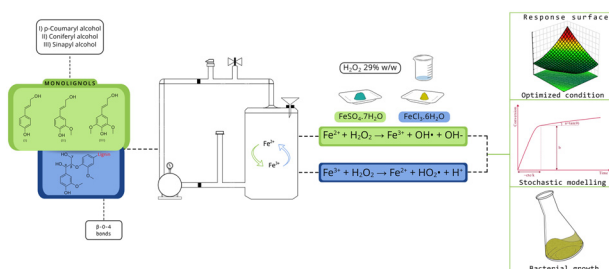
106



### Digital strategies to improve the product quality and production efficiency of fluorinated polymers: 2. Heat removal performance of reactor with internal and external cooling systems

Xi-Bao Zhang, Yin-Ning Zhou, Hao Chen, Zheng-Hong Luo,\* Liyang Zhou,\* Guojun Yu, Wenwu Liu and Shiping Zhu\*

119



### Kinetic analysis of kraft lignin conversion via the Fenton process: process optimization and stochastic modelling

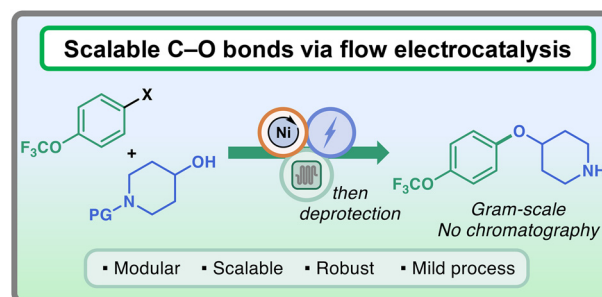
Lucas Ramos, Giovanni Maltempi-Mendes, Adriano Francisco Siqueira, Diovana Aparecida dos Santos Napoleão and Anuj Kumar Chandel\*



130

### Scalable electrocatalyzed formation of C–O bonds using flow reactor technology

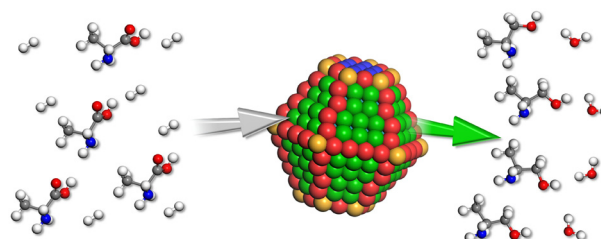
Michael Prieschl, David Cantillo, C. Oliver Kappe and Gabriele Laudadio\*



135

### Kinetic insights into structure sensitivity of Ru catalyzed L-alanine hydrogenation to alaninol

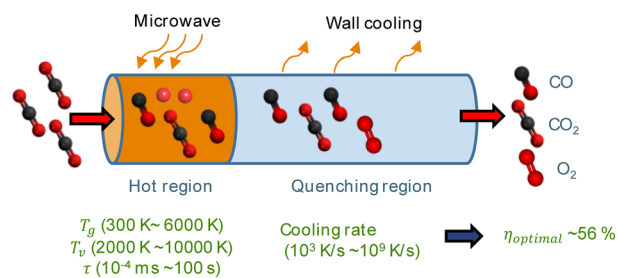
Rui Song, Chang Yao, Wenhua Li, Nihong An, Yafeng Shen,\* Nina Fei, Xiaohu Ge, Yueqiang Cao,\* Xuezhi Duan and Xinggui Zhou



146

### Two-temperature model of the non-thermal chemical dissociation of CO<sub>2</sub>

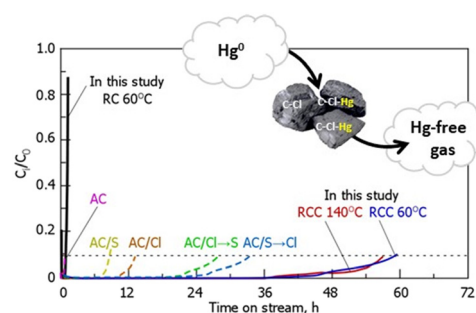
Q. Shen, A. Pikalev, F. J. J. Peeters, J. Gans and M. C. M. van de Sanden\*



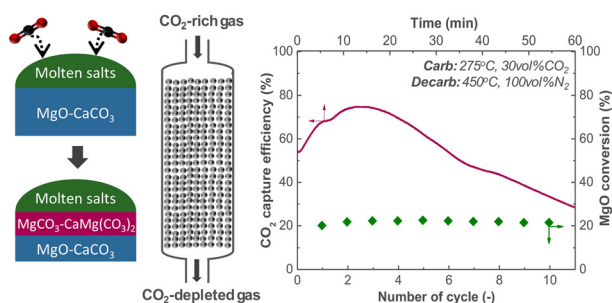
158

### Removal of gaseous Hg<sup>0</sup> by Cl-loaded carbonaceous material prepared from rice husk

Naoto Tsubouchi,\* Momone Yoshizawa, Javzandogole Bud and Yuuki Mochizuki



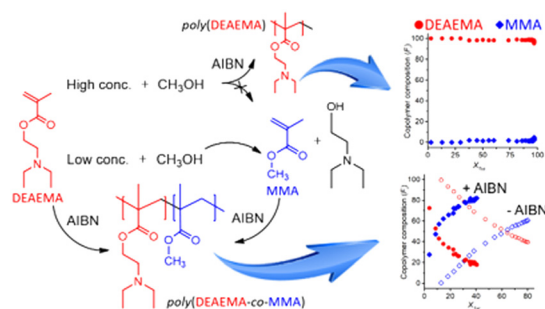
168



### Unveiling the dynamic CO<sub>2</sub> capture performance of MgO promoted with molten salts and CaCO<sub>3</sub> via fixed bed reactor experiments

Theodoros Papalas,\* Andy N. Antzaras and Angeliki A. Lemonidou\*

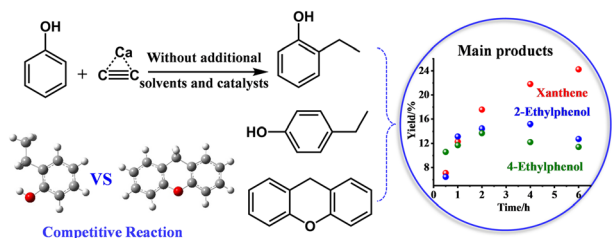
177



### Transesterification or polymerization? Reaction mechanism and kinetics of 2-(diethylamino)ethyl methacrylate with methanol and the competitive effect on free-radical polymerization

Judith Cabello-Romero, Román Torres-Lubián, Javier Francisco Enríquez-Medrano, Adrián Ochoa-Terán, Jesús Jara-Cortés and Iván Zapata-González\*

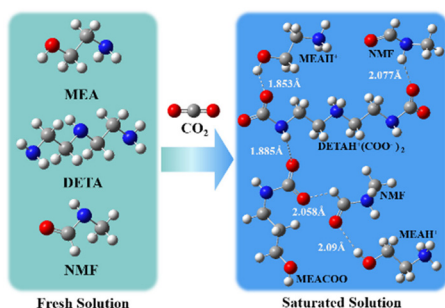
191



### Synthesis of ethylphenols and xanthenes via reaction of calcium carbide and phenol: experimental and theoretical studies

Xin Liu, Yuxin Yan, Zhenyu Liu and Qingya Liu\*

203



### Design and performance evaluation of low-volatility and low-viscosity absorbents for CO<sub>2</sub> capture

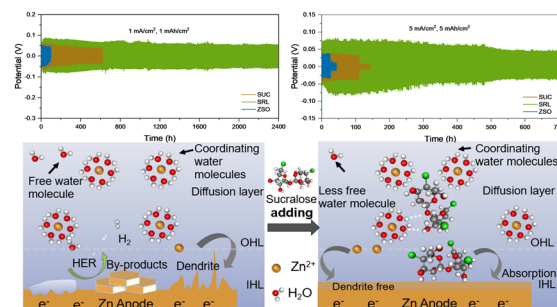
Ning Ma, Liu Yang, Zhenchang Fang, Kaijia Jiang, Xinling Li\* and Zhen Huang\*



214

### Sugar additive with a halogen group enabling a highly reversible and dendrite-free Zn anode

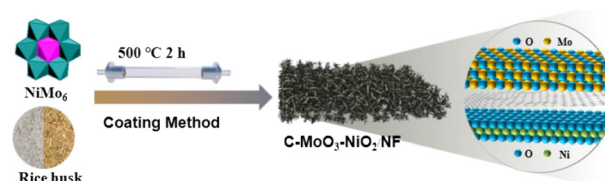
Weihao Xu, Xipo Ma, Pengbo Lyu, Zhenren Gao, Chunshuang Yan\* and Chade Lv\*



224

### Nickel foam supported biochar doped Ni–Mo bimetallic oxide for supercapacitor application

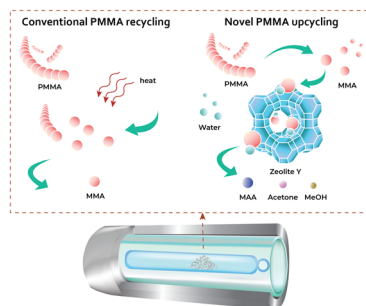
Zhongxin Jin,\* Kaijia Hu, Feng Lin, Siqi Liu, Ruining Gu, Wei Zhang, Siyu Liu, Caiying Li, Hongyang Liao, Xiping Cai, Haijun Pang, Chunjing Zhang\* and Huiyuan Ma\*



237

### Upcycling polymethyl methacrylate to methacrylic acid

Yanfa Zhuang, Nooshin Saadatkhah, Tien-Dat Nguyen, Jacopo De Tommaso, Clive Yi Jie Ng, Chunyu Wang, Abdellah Aji and Gregory S. Patience\*



251

### Development and simulation of annular flow photoreactors: integration of light-diffusing fibers as optical diffusers with laser diodes

Sergio Carrillo De Hert, Rafael Lopez-Rodriguez, Michael J. Di Maso, Jonathan P. McMullen and Steven Ferguson\*

