Materials Advances

An open access journal publishing across the breadth of materials science

rsc.li/materials-advances

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.

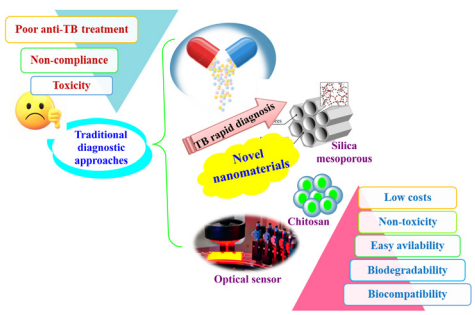
IN THIS ISSUE

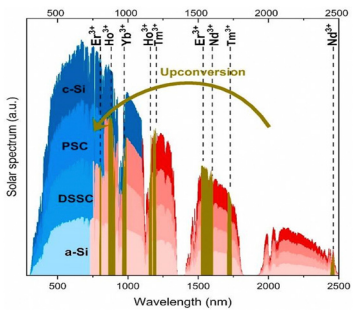
ISSN 2633–5409 CODEN MAADC9 5(5) 1759–2186 (2024)

Cover
See Norihisa Kobayashi *et al.*, pp. 1897–1902. Image reproduced by permission of Norihisa Kobayashi from *Mater. Adv.*, 2024, **5**, 1897.

Inside cover
See Sambeeta Das *et al.*, pp. 1875–1879. Image reproduced by permission of Sambeeta Das from *Mater. Adv.*, 2024, **5**, 1875.

REVIEWS





ROYAL SOCIETY OF CHEMISTRY

NEW JOURNAL

RSC Applied Interfaces

GOLD OPEN ACCESS

Interfacial and surface research with an applied focus

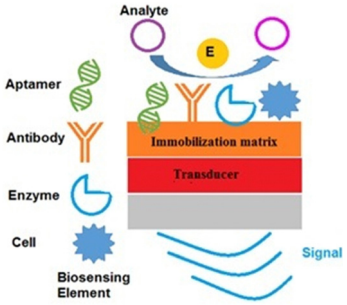
Interdisciplinary and open access

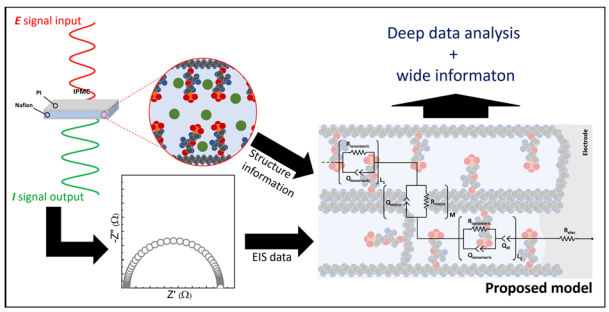
rsc.li/RSCApplInter

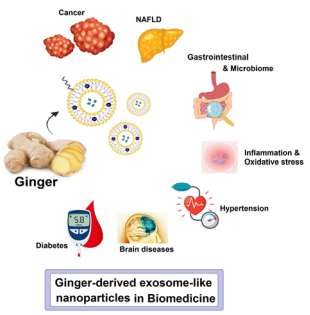
Fundamental questions
Elemental answers

Registered charity number: 207890

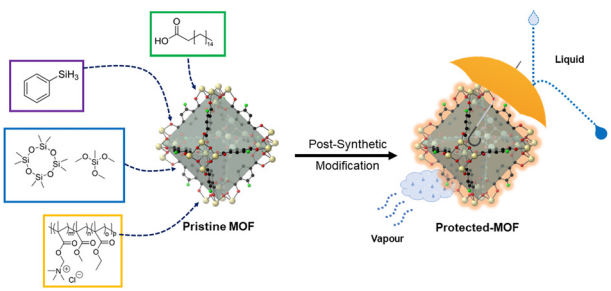
REVIEWS





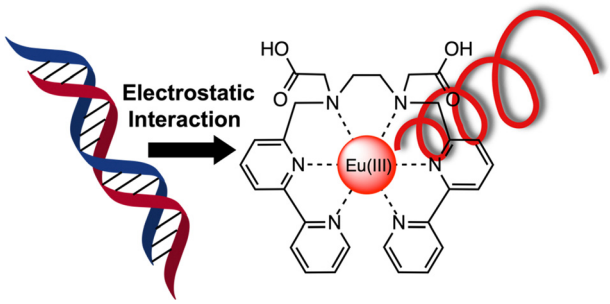


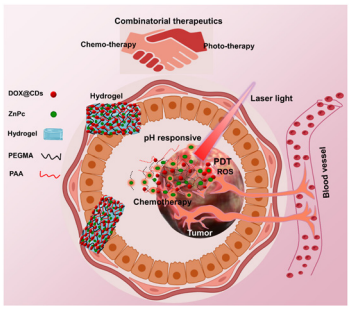
COMMUNICATIONS

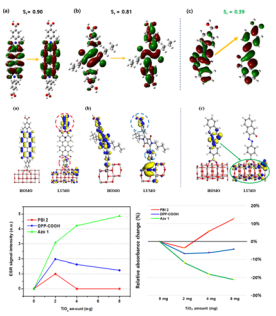


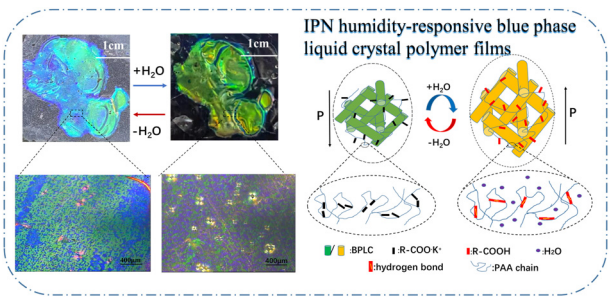
COMMUNICATIONS

PAPERS



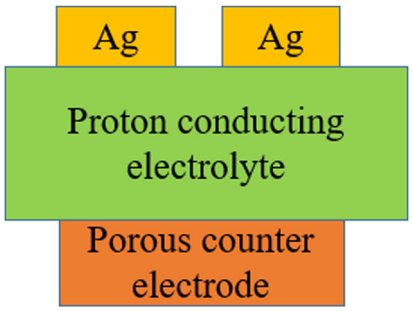






PAPERS

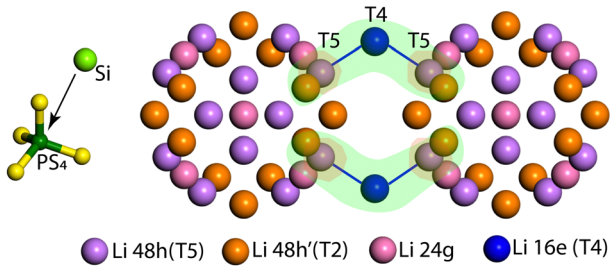
1940



Fabrication and preliminary testing of patterned silver cathodes for proton conducting IT-SOFCs

Md Shariful Islam Sozal, Wenhao Li, Suprabha Das, Borzooye Jafarizadeh, Azmal Huda Chowdhury, Chunlei Wang and Zhe Cheng*

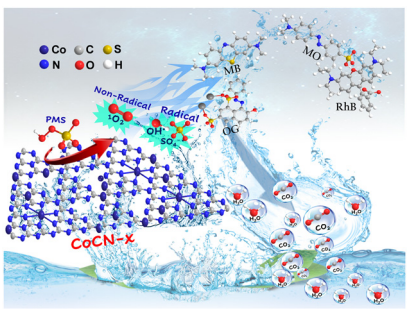
1952



Understanding the role of aliovalent cation substitution on the li-ion diffusion mechanism in $Li_{6+x}P_{1-x}Si_xS_5Br$ argyrodites

Tammo K. Schwietert, Ajay Gautam, Anastasia K. Lavrinenko, David Drost, Theodosios Famprikis, Marnix Wagemaker* and Alexandros Vasileiadis*

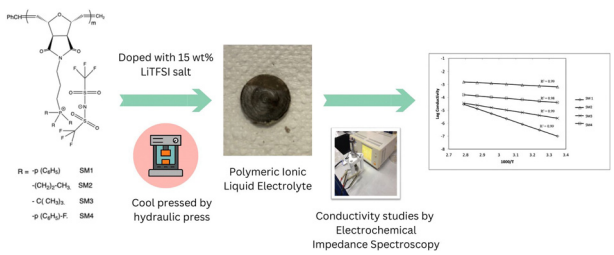
1960



Novel chemically reduced cobalt-doped g-C_3N_4 (CoCN-*x*) as a highly heterogeneous catalyst for the super-degradation of organic dyes *via* peroxymonosulfate activation

Aboubakr Ben Hamou,* Mohamed Enneiymy,* Salaheddine Farsad, Asma Amjlef, Ayoub Chaoui, Nisrine Nouj, Ali Majdoub, Amane Jada,* Mohamed Ez-zahery and Noureddine El Alem*

1977



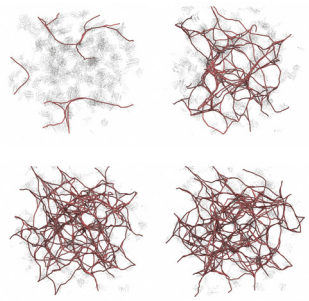
Synthesis of oxanorbornene-based phosphonium polymeric ionic liquids (PILs) and investigation of their electrical properties

M. S. M. Misenan, N. Ceren Süer, N. Yılmaz Canli, A. S. A. Khiar* and T. Eren*

1991

Crosslinker energy landscape effects on dynamic mechanical properties of ideal polymer hydrogels

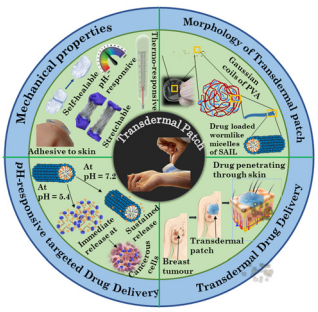
Eesha Khare, Amadeus C. S. de Alcântara, Nic Lee, Munir S. Skaf and Markus J. Buehler*



1998

PVA/guanidinium oleate transdermal patch as a pH-responsive drug delivery system for the localized and targeted delivery of anticancer drugs

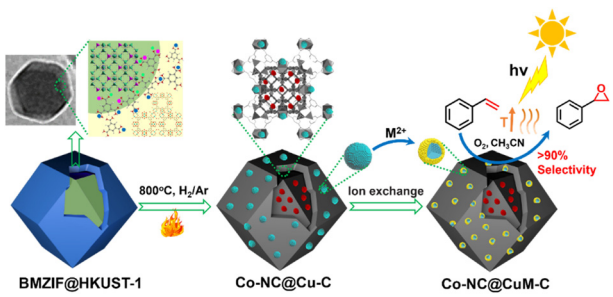
Monika Jain, Raviraj Pansuriya, Rahul Thakur, Adesh K. Saini, Sugam Kumar, Vinod K. Aswal, Suresh Kumar Kailasa and Naved I. Malek*



2012

Trimetallic MOF1@MOF2 heterostructure derived Co–NC@CuM–C for enhanced photothermal catalysis in styrene epoxidation

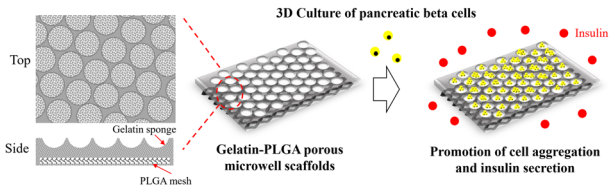
Xinliu Zhao, Fusheng Liu, Yu-Zhen Chen* and Zhibo Li*



2019

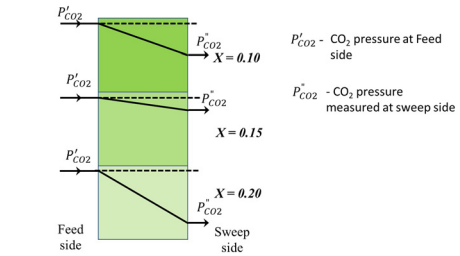
Porous microwell scaffolds for 3D culture of pancreatic beta cells to promote cell aggregation and insulin secretion

Huajian Chen, Tianjiao Zeng, Toru Yoshitomi, Naoki Kawazoe, Hirotake Komatsu, Yingnan Yang and Guoping Chen*



PAPERS

2027

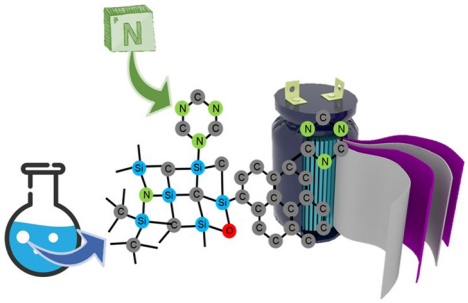


CO_2 permeation through $Ce_{1-x}Gd_xO_{2-\delta}$-$LiNaCO_3$ (80:20 v%) composite membranes of different oxide ion conducting domains

Optimization of safe doping level for enhanced CO_2 flux in composite membrane

Atul P. Jamale* and Gonçalo Henriques

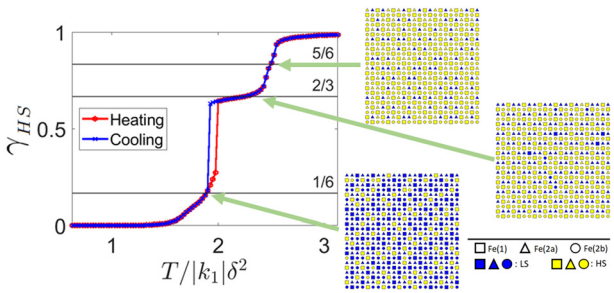
2040



Innovative strategies for nitrogen-incorporating silicon oxycarbide-based preceramic polymer synthesis

B. Pérez-Román,* A. Merchán del Real, J. Rubio, M. A. Mazo and F. Rubio-Marcos

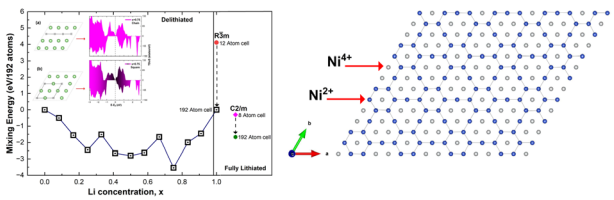
2057



Multistep transitions in spin crossover materials without long-range spin state order from dimensional reduction

Gian Ruzzi, Jace Cruddas and Benjamin J. Powell*

2069



Structures and electronic states of nickel-rich oxides for lithium ion batteries

Saleem Yousuf, Md Maruf Mridha and Rita Magri*

PAPERS

PAPERS

2175

pH-sensitive peptide hydrogel encapsulating the anti-angiogenesis drug conbercept and chemotherapeutic drug dox as a combination therapy for retinoblastoma

Wen Fan, Mingkang Chen, Faisal Raza, Hajra Zafar, Faryal Jahan, Yuejian Chen, Lexin Ge, Minyan Yang* and Yiqun Wu*