

# Materials Advances

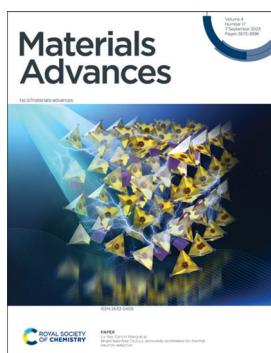
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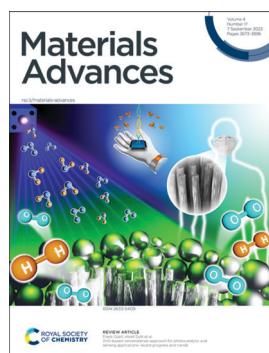
## IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 4(17) 3673–3896 (2023)



### Cover

See Lu Yao, Cai Lin Wang et al., pp. 3714–3723.  
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### Inside cover

See Frank Güell, Ateet Dutt et al., pp. 3685–3707.  
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## EDITORIAL

3682

### Advanced functional materials and manufacturing processes

Jessica O. Winter,\* Jawaad A. Darr\* and John Wang\*

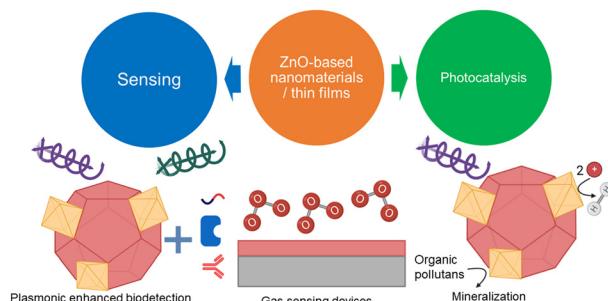


## REVIEW

3685

### ZnO-based nanomaterials approach for photocatalytic and sensing applications: recent progress and trends

Frank Güell,\* Andrés Galdámez-Martínez, Paulina R. Martínez-Alanis, Ariadne C. Catto, Luís F. da Silva, Valmor R. Mastelaro, Guillermo Santana and Ateet Dutt\*



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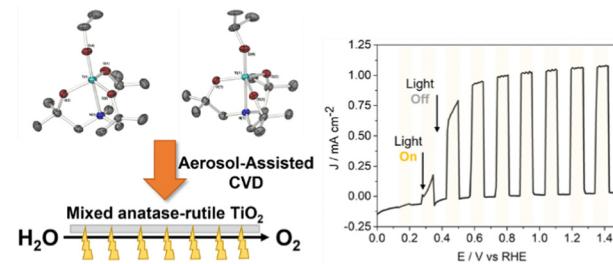


## COMMUNICATION

3708

## Aerosol-assisted chemical vapour deposition of highly efficient mixed anatase-rutile $\text{TiO}_2$ for photoelectrochemical water splitting

Thom R. Harris-Lee, Enrico Della Gaspera, Frank Marken, Jie Zhang, Cameron L. Bentley and Andrew L. Johnson\*

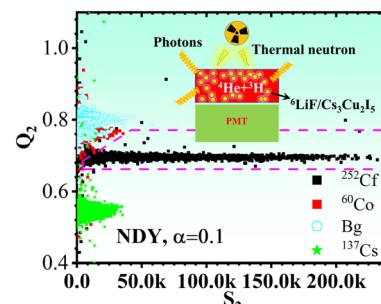


## PAPERS

3714

## Bright lead-free $\text{Cs}_3\text{Cu}_2\text{I}_5$ perovskite scintillators for thermal neutron detection

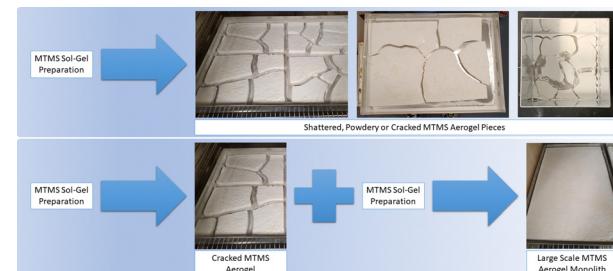
Lu Yao,\* Wanting Gui, Xunsheng Zhou, Chao Li, Shi Zhang, Jing Kui Zhao and Cai Lin Wang\*



3724

## Large scale recyclable monolithic methyltrimethoxysilane aerogels formed by self-reinforcement

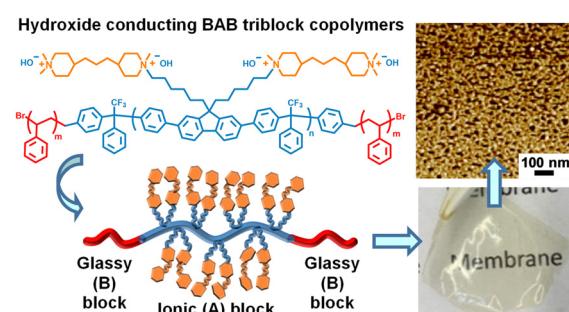
Gylen Odling,\* Hannah Logan, Aaron Chan, Andrew J. Bissel, Colin R. Pulham and David E. Oliver



3733

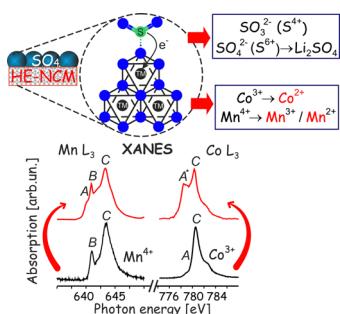
## Hydroxide conducting BAB triblock copolymers tailored for durable high-performance anion exchange membranes

Andrit Allushi, Pegah Mansouri Bakvand, Haiyue Gong and Patric Jannasch\*



## PAPERS

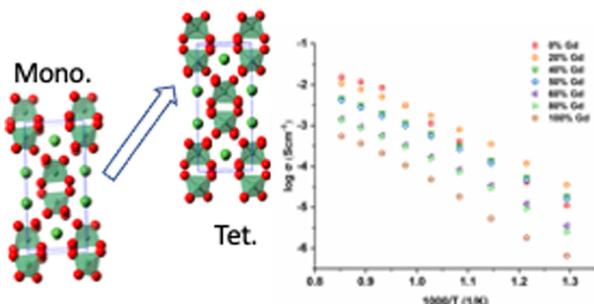
3746



## Impact of thermal gas treatment on the surface modification of Li-rich Mn-based cathode materials for Li-ion batteries

Maximilian Mellin, Zhili Liang, Hadar Sclar, Sandipan Maiti, Igor Piš, Silvia Nappini, Elena Magnano, Federica Bondino, Ilargi Napal, Robert Winkler, Réne Hausbrand, Jan P. Hofmann, Lambert Alff, Boris Markovsky, Doron Aurbach, Wolfram Jaegermann and Gennady Cherkashinin\*

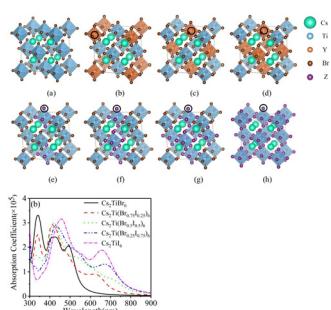
3759



## Investigation of the crystal structure and electrochemical performance of Gd doped $\text{LaNb}_{0.9}\text{Mo}_{0.1}\text{O}_{4.05}$

Yidong Han and Stephen J. Skinner\*

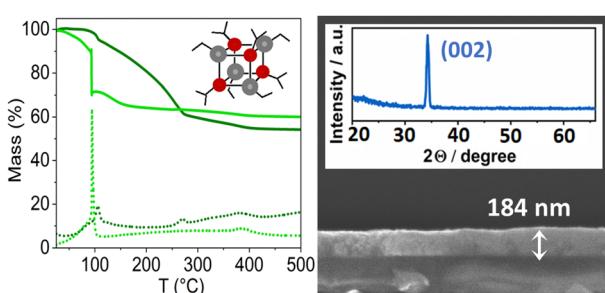
3767



## The modulation of the electrical and optical properties of $\text{Cs}_2\text{TiBr}_6$ by doping

Jianwei Wei,\* Junhua Wu, Yunyun Wang, Yuze Zhang, Zengwei Ma, Chenkai Qiao and Hui Zeng

3774



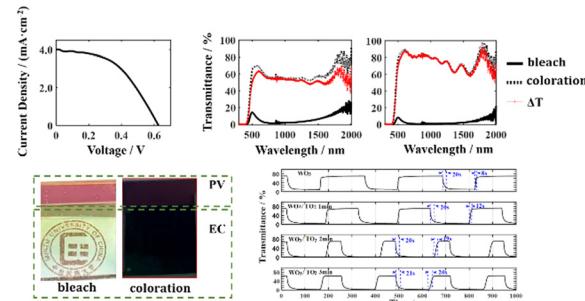
## Self-textured ZnO via AACVD of alkyl alkoxides: a solution-based seed-less route towards optoelectronic-grade coatings

Clara Sanchez-Perez,\* Sriluxmi Srimuruganathan, Carlos Sotelo-Vazquez, Sanjayan Sathasivam, Mingyue Wang, Javier Marugán, Ivan P. Parkin and Claire J. Carmalt\*



## PAPERS

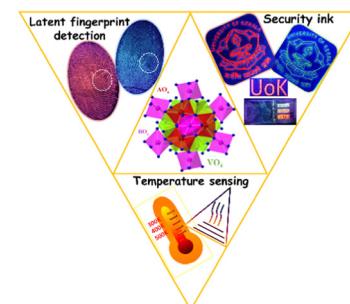
3787

**The effect of the  $\text{TiO}_2$  interface layer on the electrochromic properties of  $\text{WO}_3$ -based devices**Panshu Gui, Ziyi Jin, Yufeng Bai, Zhengqiao Lv, Jianwei Mo, Shuai Chang and Di Yang\*  
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3796

**Delving into the multifunctionality of  $\text{Sr}_2\text{NaMg}_2\text{V}_3\text{O}_{12}$  via  $\text{RE}^{3+}$  substitution for dual-mode temperature sensing, latent fingerprint detection and security inks**

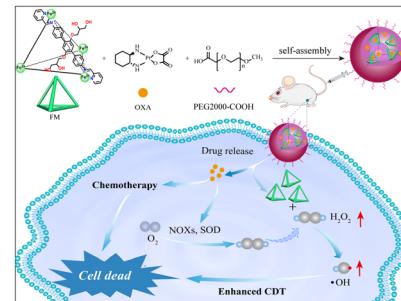
Amrithakrishnan Bindhu, Jawahar Isuhak Naseemabeevi and Subodh Ganesanpotti\*



3813

**Water-soluble ferrous metallacage combined with oxaliplatin for a synergistic chemo/chemodynamic therapy**

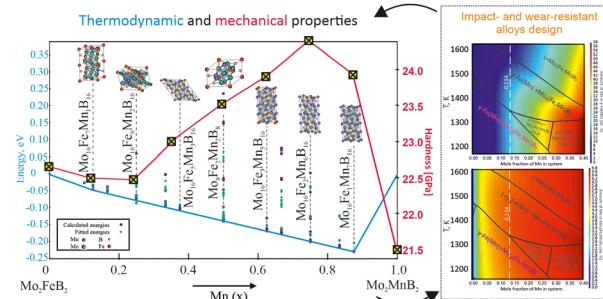
Jing He, Wei He, Run Wang, Jingjing Jiao\* and Shiping Yang\*



3822

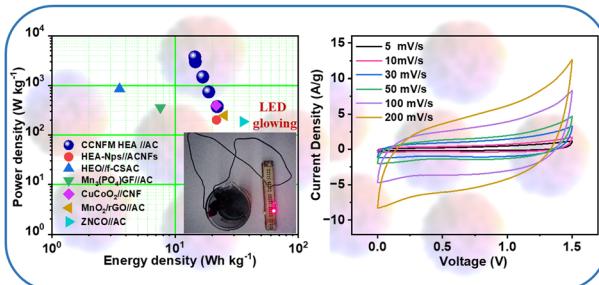
**The thermodynamic and mechanical properties of Earth-abundant metal ternary boride  $\text{Mo}_2(\text{Fe},\text{Mn})\text{B}_2$  solid solutions for impact- and wear-resistant alloys**

Pavlo Prysyazhnyuk\* and Devis Di Tommaso

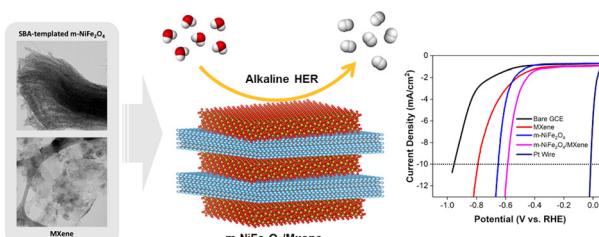


## PAPERS

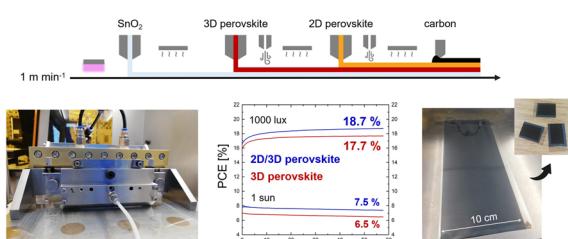
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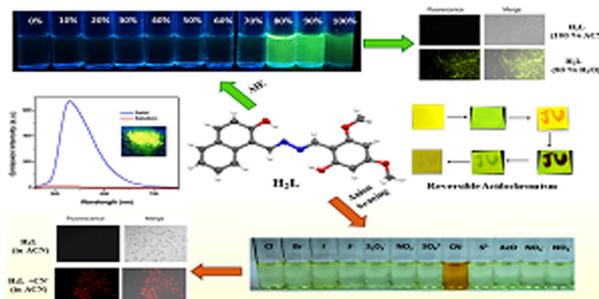
3853



3863

MANUFACTURING PROCEDURE FOR FLEXIBLE PEROVSKITE SOLAR CELLS  
LOW-COST | LARGE SCALE DEPOSITION | AMBIENT ATMOSPHERE | LOW TEMPERATURE

3874



## High energy density liquid state asymmetric supercapacitor devices using Co-Cr-Ni-Fe-Mn high entropy alloy

Gobinda C. Mohanty, Chinmayee C. Gowda, Pooja Gakhad, M. Sanjay, Suman Sarkar, Koushik Biswas,\* Abhishek Singh\* and Chandra S. Tiwary\*

A SBA-15-templated mesoporous NiFe<sub>2</sub>O<sub>4</sub>/MXene nanocomposite for the alkaline hydrogen evolution reaction

Munawar Khalil,\* Michael Lesa, Alexander G. Juandito, Afiten R. Sanjaya, Tribidasari A. Ivandini, Grandprix T. M. Kadja, Muhammad Haris Mahyuddin, Mehran Sookhakian and Yatimah Alias

## Fabrication of low-cost and flexible perovskite solar cells by slot-die coating for indoor applications

Cristina Teixeira, Rosinda Fuentes-Pineda, Luísa Andrade, Adélio Mendes and Dávid Forgács\*



## CORRECTIONS

3892

**Correction: Solution-processed orange and white OLEDs sensitized by an electroactive pure organic room-temperature phosphorescent polymer**

Yiting Tian, Renze He, Guoyun Meng,\* Shumeng Wang,\* Lei Zhao and Junqiao Ding\*

3893

**Correction: Large scale recyclable monolithic methyltrimethoxysilane aerogels formed by self-reinforcement**

Gylen Odling,\* Hannah Logan, Aaron Chan, Andrew J. Bissell, Colin R. Pulham and David E. Oliver

