

# Materials Advances

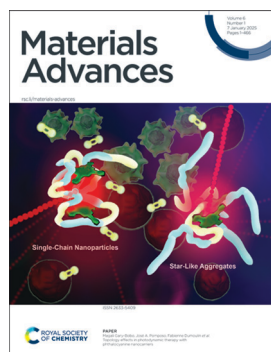
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ISSN 2633-5409 CODEN MAADC9 6(1) 1-466 (2025)



### Cover

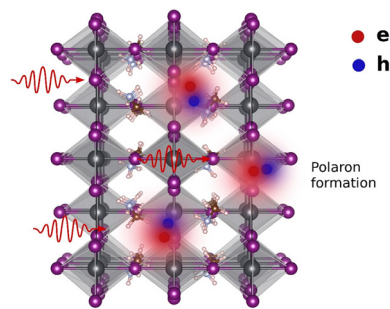
See Magali Gary-Bobo, José A. Pomposo, Fabienne Dumoulin *et al.*, pp. 148–156. Image reproduced by permission of Davide Arena from *Mater. Adv.*, 2025, 6, 148.

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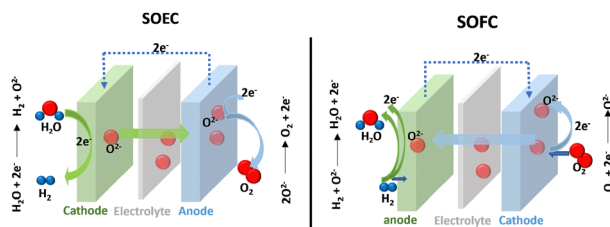
Zeeshan Muhammad\* and Arooj Rashid



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### Highly conductive and stable electrolytes for solid oxide electrolysis and fuel cells: fabrication, characterisation, recent progress and challenges

Jing Li, Qiong Cai and Bahman Amini Horri\*



# Environmental Science: Atmospheres

GOLD  
OPEN  
ACCESS

## Connecting communities and inspiring new ideas

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Fundamental questions  
Elemental answers

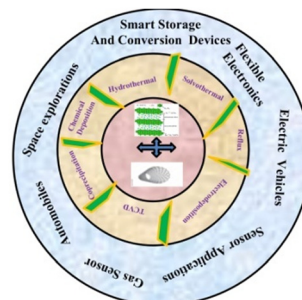


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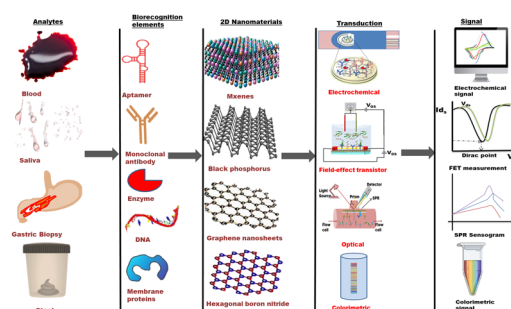
Priyadarshi K. Ray and Kulamani Parida\*



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## Unlocking the potential of 2D nanomaterial-based biosensors in biomarker-based detection of *Helicobacter pylori*

Desmond Lutomia, Rachna Poria, Deepak Kala, Anupam Kumar Singh, Manoj K Gupta, Deepak Kumar,\* Ankur Kaushal\* and Shagun Gupta\*

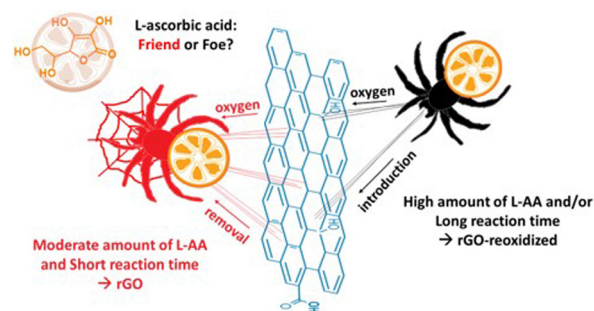


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Omar El-Basha Hassan, Yves Chenavier, Vincent Maurel, Julien Pérard, Adnane Bouzina, Lionel Dubois and Florence Duclairoir\*

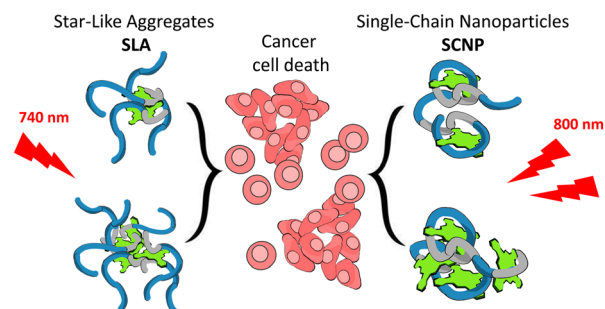


## PAPERS

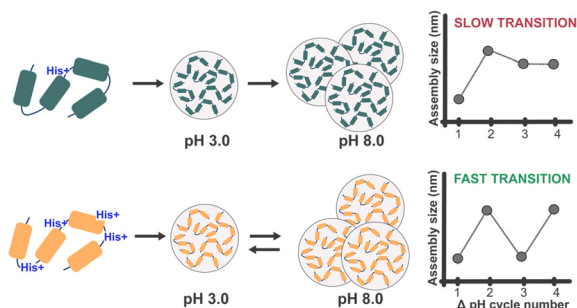
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Davide Arena, Ümit İşci, Mélanie Onofre, Christophe Nguyen, Zeynel Şahin, Ester Verde-Sesto, Amaia Iturraspe, Arantxa Arbe, Magali Gary-Bobo,\* José A. Pomposo\* and Fabienne Dumoulin\*



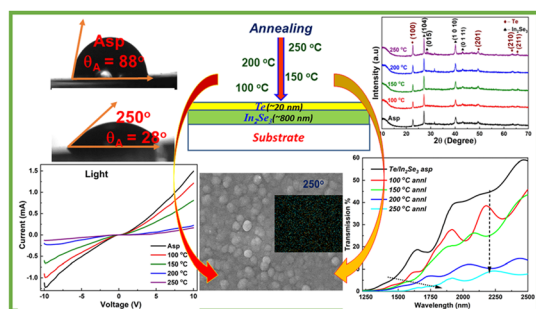
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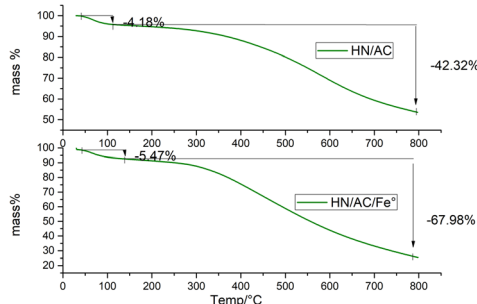
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### Improvement of hydrophilicity and optical nonlinearity in a Te/In<sub>2</sub>Se<sub>3</sub> bilayer heterostructure film by annealing at different temperatures for optoelectronic applications

S. Supriya, S. Das, D. Alagarasan and R. Naik\*

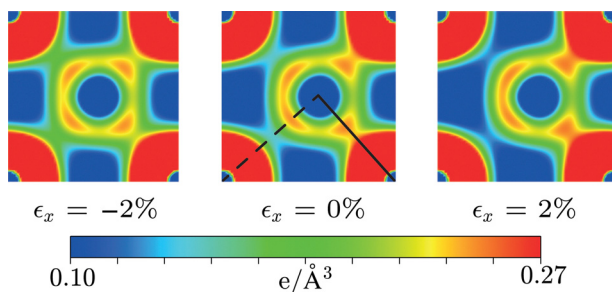
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C. A. Ntinkam Simo, J. M. Dika and C. M. Kede\*

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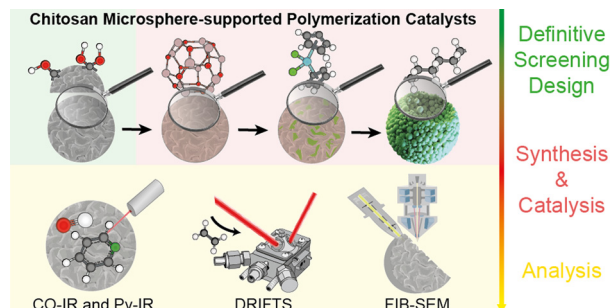
Arun Jangir, Duc Tam Ho and Udo Schwingenschlöggl\*



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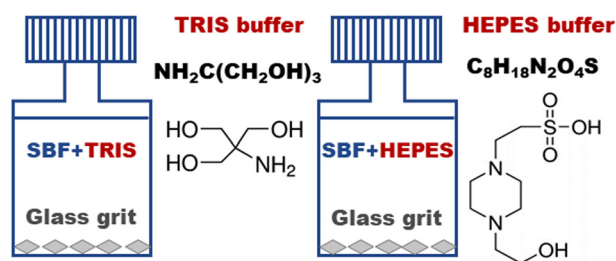
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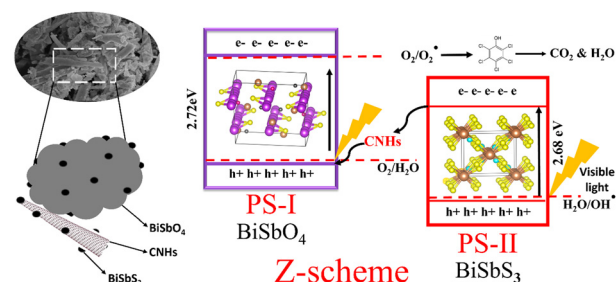
Diana Horkavcová,\* Eliška Sedláčková, Petr Bezdička, Miloslav Lhotka, Karolína Pánová and Aleš Helebrant



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### Synthesis of a $\text{BiSbS}_3@/\text{BiSbO}_4/\text{CNH}$ nanocomposite for wastewater treatment and electrochemical application

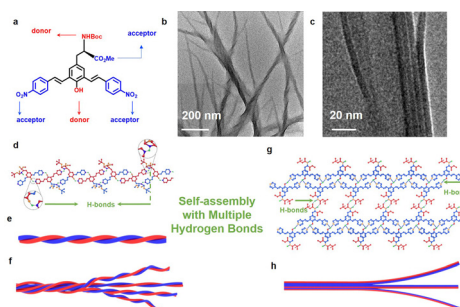
Maria Batool and Muhammad Nadeem Zafar\*



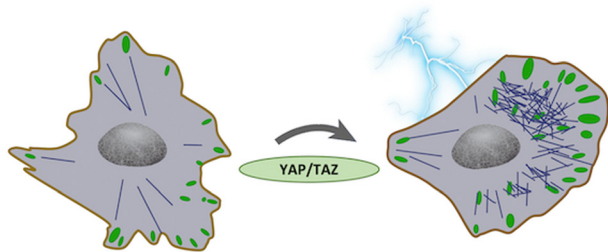
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### Programmed self-assembly of conjugated oligomer-based helical nanofibres through hydrogen bonding interactions

Yu Wang, Guoxin Yin, Pradeep Cheraku, Yu Xia, Yuping Yuan, Peng Miao, Huidong Zang, Mircea Cotlet,\* Ping Xu\* and Hsing-Lin Wang\*



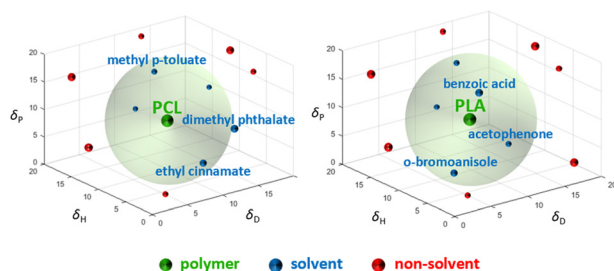
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Bernadette Basilio, Maddalena Grieco, Stefania D'Amone, Ilaria Elena Palamà, Clotilde Lauro, Pamela Mozetic, Alberto Rainer, Simone de Panfilis, Valeria de Turris, Giuseppe Gigli and Barbara Cortese\*

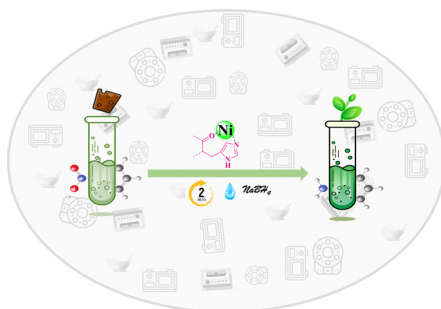
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Patrik Boura, Lenka Krajkova, Adam Bouz, Silvestr Figalla, Alexandr Zubov, Bart Van der Bruggen and Juraj Kosek\*

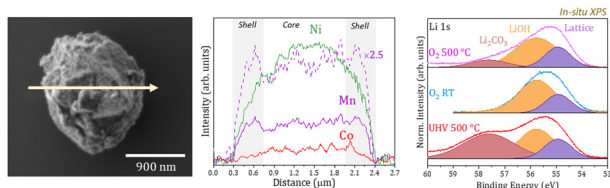
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### Unveiling the impact of the mpg-C<sub>3</sub>N<sub>4</sub>@Pa@Ni nanocomposite in the reduction of nitroaromatic derivatives by comparative solvent-free methods

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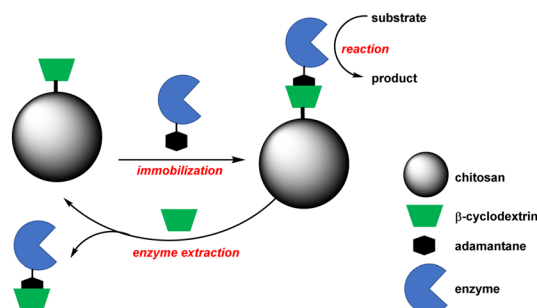
J. García-Alonso, S. Krüger, K. Kelm, E. Guney, N. Yuca, I. J. Villar-García, B. Saruhan, V. Pérez-Dieste, D. Maestre\* and B. Méndez



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### Use of supramolecular chemistry based on $\beta$ -cyclodextrin-grafted chitosan beads to prepare green biocatalytic materials

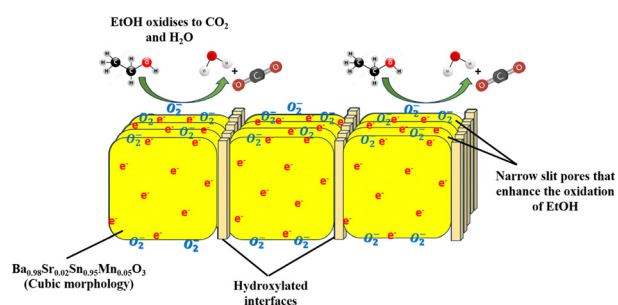
Agatha Bastida,\* Leoncio Garrido and Alfonso Fernández-Mayoralas\*



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### Nanocrystalline and mesoporous $(\text{Ba,Sr})(\text{Sn,Mn})\text{O}_3$ perovskite solid solution: a potential n-type semiconductor for room temperature ethanol sensing applications

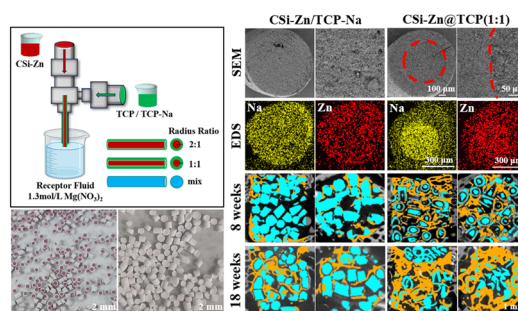
Nehal Ashok Waghchoure and Kampurath Poduvattil Jayadevan\*



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### Doping functional ions in phase-stabilizing core-shell biphasic granules readily tunes bone regeneration *in situ*

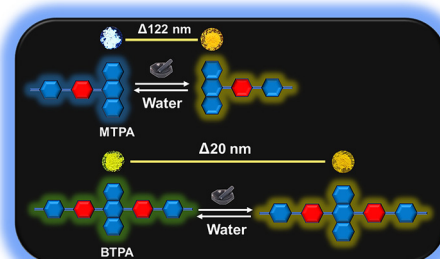
Yan Xu, Jian Shen, Lingling Dong, Xiaoyi Jiao, Lei Zhang, Jiaqi Yang, Shanxiang Xu, Xianyan Yang, Huiming Zhong,\* Guoli Yang\* and Zhongru Gou\*



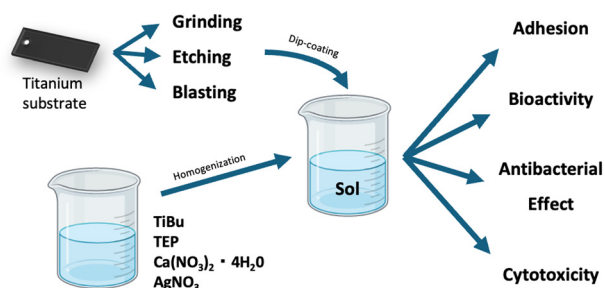
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### D-A-D type high contrast mechanochromic luminescence based on anthracene and pyridinium salt derivatives

Xianchen Hu, Zhengfen Liu, Shubiao Xiao\* and Junli Yang\*



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### Development of titania coatings containing calcium, phosphorus, and silver, applied *via* the sol-gel method and dip-coating technique

Karolína Opavová,\* Diana Horkavcová, Eva Jablonská, Lucie Mrázková and Anna Bašusová

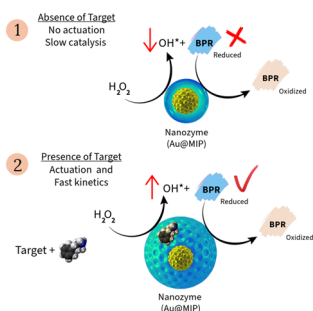
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### Self-assembling PEGylated mannolipids for liposomal drug encapsulation of natural products

Leila Mousavifar, Mukul R. Gupta, Madleen Rivat, Aly El Riz, Abdelkrim Azzouz, Jordan D. Lewicky, Alexandrine L. Martel, Hoang-Thanh Le and René Roy\*

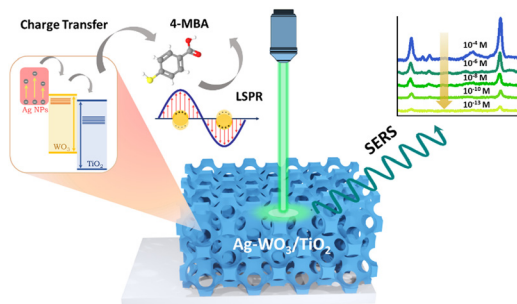
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### Generic strategy for the synthesis of highly specific Au/MIP nanozymes and their application in homogeneous assays

Shaemaa Hadi Abdulsada, Alvaro Garcia Cruz,\* Christopher Zaleski, Elena Piletska, Damla Ulker, Stanislav Piletsky and Sergey A. Piletsky

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### Interplay of plasmonic and charge transfer effects for ultrasensitive Ag-WO<sub>3</sub>/TiO<sub>2</sub> photonic crystal SERS sensors

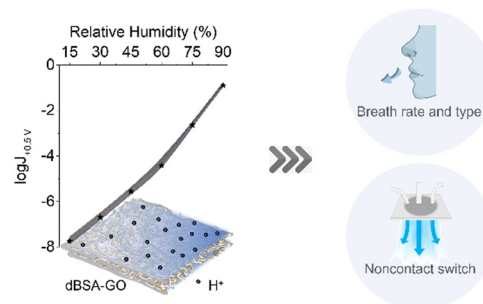
Maria-Athina Apostolaki, Elias Sakellis, Spiros Gardelis and Vlassis Likodimos\*



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### Denatured bovine serum albumin particle decorated graphene oxide nanocomposite for ultrasensitive resistive humidity sensing

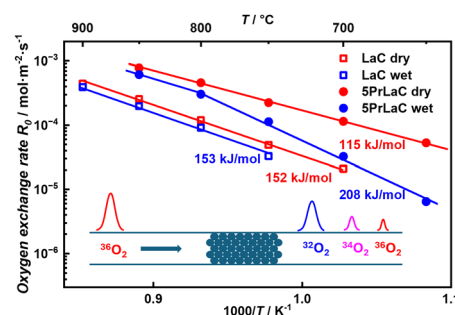
Pan Qi, Yongkang Zhang, Ziang Zhang, Xiaobing Li and Cunlan Guo\*



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### Unravelling the oxygen exchange mechanism on $\text{La}_2\text{Ce}_2\text{O}_7$

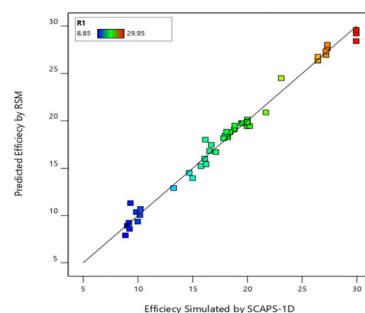
Yizhou Shen, Vincent Thor eton and Reidar Haugrud\*



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### Unlocking the full potential of solar cell materials: parameter sensitivity analysis and optimization using response surface modelling

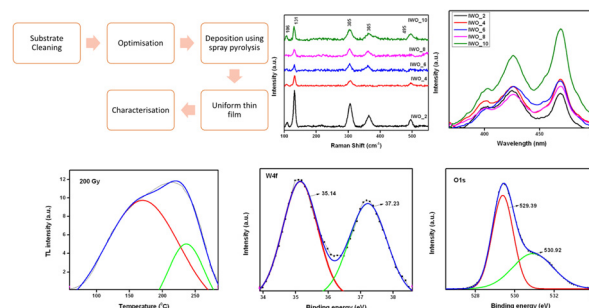
Manoj Kumar,\* Sanju Rani, Xu Wang\* and Vidya Nand Singh\*



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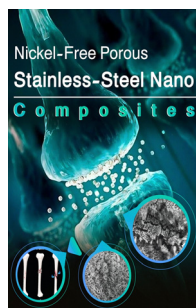
### Tuning of the structural and electrical properties of thermo-luminescent tungsten-doped indium oxide thin film

Aparna C., Pramoda Kumara Shetty\* and Mahesha M. G.



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**Nickel-free porous stainless-steel nanocomposites for versatile biomedical applications: fabrication, characterization, and evaluation of electrochemical and immunogenicity detection**

Sabreen Abdallah Abdelwahab, Mohamad Warda, Mamdouh Zewaid, Hisham Saleh, Omar A. Ahmed-Farid, Hassan A. M. Hendawy, Elbadawy A. Kamoun,\* Amr Negm, Jong Yeog Son\* and Ahmed I. Ali\*

## CORRECTION

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**Correction: Arylselanyl motifs in hierarchically structured mesoporous phenolic polymers: efficient adsorption sites for Hg<sup>2+</sup> ions**

Vishnu Selladurai and Selvakumar Karuthapandi\*

