

# Materials Advances

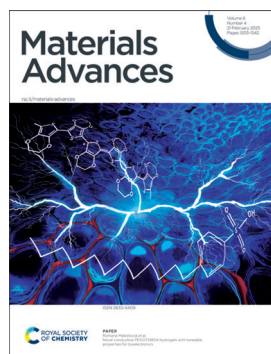
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### Cover

See Romana Malečková *et al.*, pp. 1278–1287.

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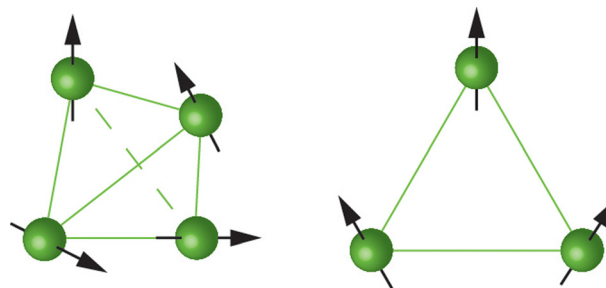
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### Short-range order and hidden energy scale in geometrically frustrated magnets

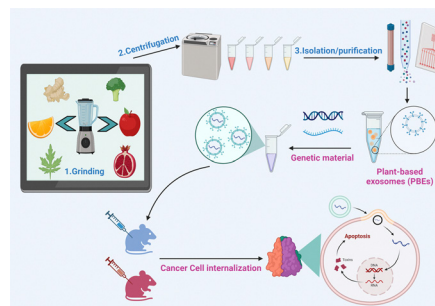
A. P. Ramirez and S. V. Syzranov



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### Deploying nucleic acids-loaded plant-derived exosomes as green nano gadget in cancer gene therapy

Marola Paula Fawzy, Hatem A. F. M. Hassan, Muhammad Umair Amin, Eduard Preis, Udo Bakowsky\* and Sherif Ashraf Fahmy\*





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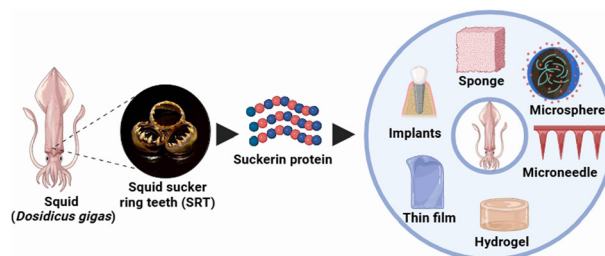


## REVIEWS

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### Suckerin based biomaterials for wound healing: a comparative review with natural protein-based biomaterials

Samson Prince Hiruthyaswamy and Kanagavel Deepankumar\*

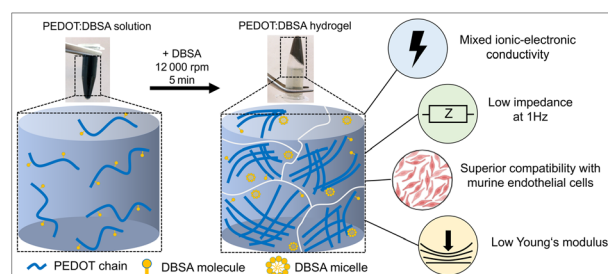


## PAPERS

1278

### Novel conductive PEDOT:DBSA hydrogels with tuneable properties for bioelectronics

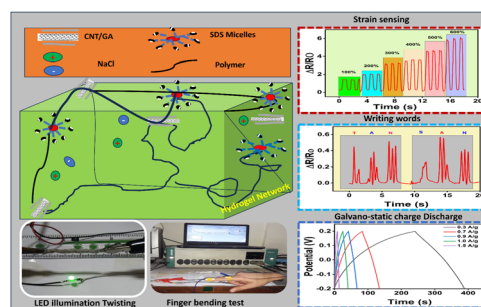
Romana Malečková,\* Šárka Tumová, Petr Smíštel, Jiří Smílek, Helena Šimůnková, Michaela Pešková, Lubomír Kubáč, Jaromír Hubálek, Jan Vítěček, Martin Vala and Martin Weiter



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### Gum arabic-CNT reinforced hydrogels: dual-function materials for strain sensing and energy storage in next-generation supercapacitors

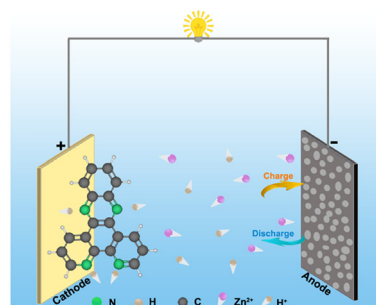
Tanzil UrRehman, Sher Ali Khan, Luqman Ali Shah\* and Jun Fu



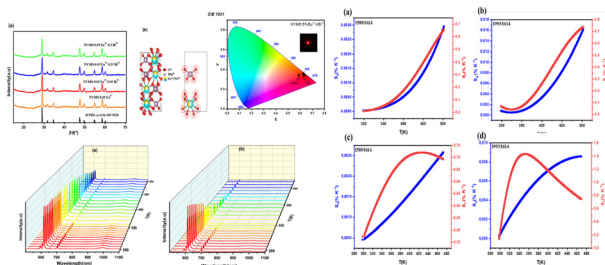
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### Proton insertion chemistry in a phenazine-based cathode for aqueous Zn-organic batteries

Yutian Xiang, Xinran Li, Chaoyi Qiu, Wenhui Yang, Lei Liu, Haoxiang Yu, Liyuan Zhang, Lei Yan\* and Jie Shu\*



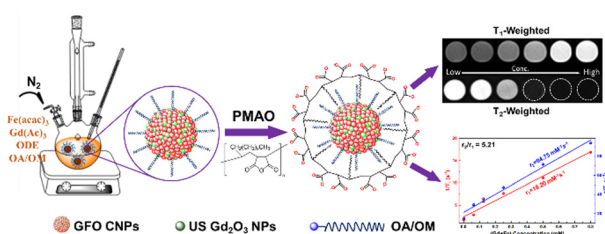
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### Enhancing the luminescence intensity of $\text{Eu}^{3+}$ -activated $\text{NaYb}(\text{MoO}_4)_2$ phosphors through bismuth doping: Judd–Ofelt analysis, lighting, and temperature-sensing applications

Yosra Bahrouni, Ikhlas Kachou, Kamel Saidi, Tarak Kallel, Mohamed Dammak,\* Irene Mediavilla and Juan Jiménez

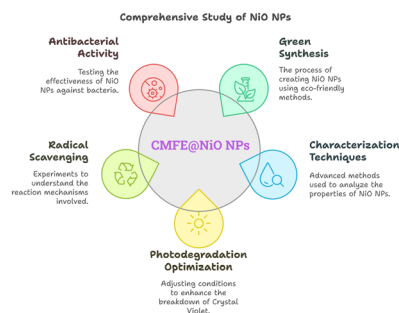
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### Biocompatible PMAO-coated $\text{Gd}_2\text{O}_3/\text{Fe}_3\text{O}_4$ composite nanoparticles as an effective $T_1$ – $T_2$ dual-mode contrast agent for magnetic resonance imaging

Le T. T. Tam, Nguyen T. N. Linh, Le T. Tam, Duong V. Thiet, Pham H. Nam, Nguyen T. H. Hoa, Le A. Tuan, Ngo T. Dung and Le T. Lu\*

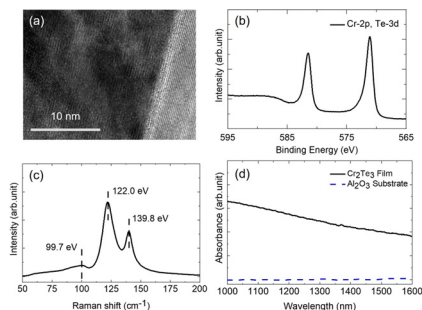
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### Optimization of photodegradation of crystal violet dye and biomedical applications of greenly synthesized NiO nanoparticles

Abu Bakar Siddique, Muhammad Ashraf Shaheen,\* Shakra Shafeeq, Azhar Abbas, Yasir Zaman, Muhammad Zahid Ishaque and Muhammad Aslam

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### Optical nonlinear refractive index measurements of $\text{Cr}_2\text{Te}_3$ with an immense photothermal effect

Bo-Yi Chen, Jia-Chi Lan, Mu-Hsuan Tsai, Kyungtaek Lee, Yeong Gwang Khim, In Hak Lee, Young Jun Chang, Ju Han Lee\* and Chao-Kuei Lee\*

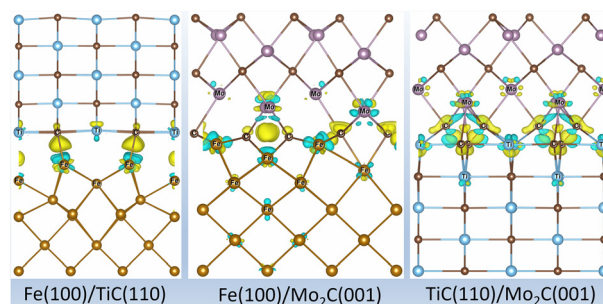




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### Atomic structures and energetics of heterophase interfaces among Fe(100), TiC(110) and Mo<sub>2</sub>C(001) surfaces: insights from first-principles calculations

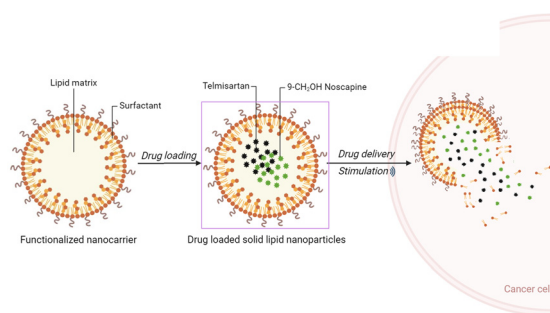
Chol-Jun Yu,\* Kyong-A. Rim, Song-Chol Ri, Chol Ryu, Hyok-Bom Yun, Jang-Il Rim and Chol-Song Pang



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### Assessing dual drug 9-hydroxymethyl noscapine and telmisartan-loaded stearic acid nanoparticles against (H1299) non-small cell lung cancer and their mechanistic interaction with bovine serum albumin

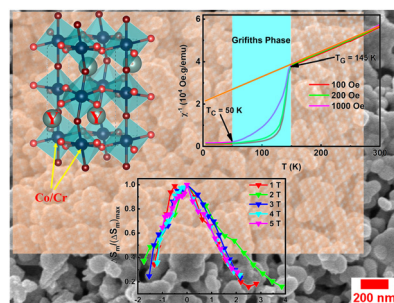
Snigdha Singh,\* Shubham Sewariya, Tanya Goel, Sagar Panchal, Aarushi Singh, Shrikant Kukreti, Manisha Tiwari and Ramesh Chandra\*



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### Observation of Griffiths-like phase and magnetocaloric effect in disordered Y<sub>2</sub>CoCrO<sub>6</sub> double perovskite

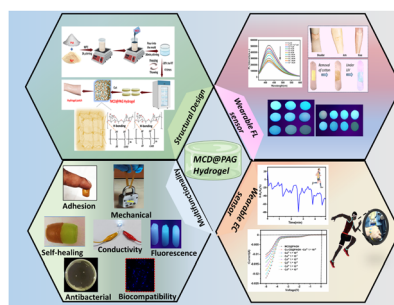
M. A. Islam, Mohasin Tarek, Rimi Rashid, M. A. A. Bally, Ferdous Ara and M. A. Basith\*



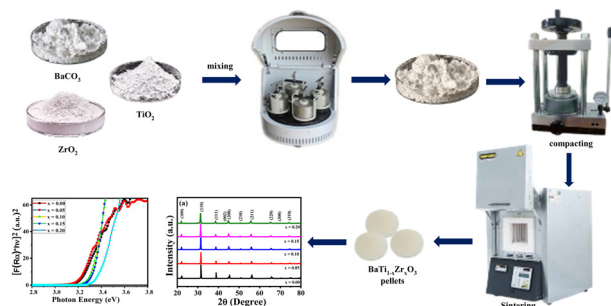
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### A stretchable PVA–agar hydrogel patch embedded with metal-doped carbon dots (MCD) for monitoring the Ca<sup>2+</sup> biomarker

Lingaraj Behera and Sasmita Mohapatra\*



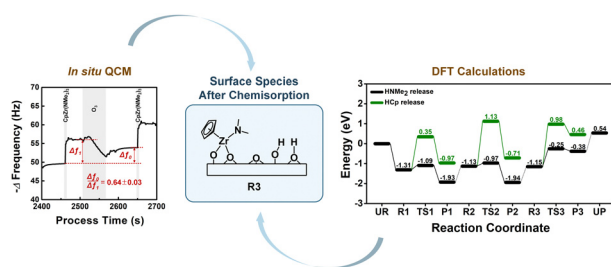
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### Exploring the effects of zirconium doping on barium titanate ceramics: structural, electrical, and optical properties

Suravi Islam,\* Mohammad Robel Molla, Nazia Khatun, Nazmul Islam Tanvir, Mahmuda Hakim and Md. Saidul Islam

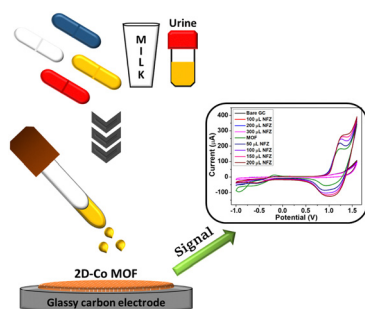
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### Reaction mechanism of atomic layer deposition of zirconium oxide using tris(dimethylamino)cyclopentadienyl zirconium: experimental and theoretical study

Hye-Lee Kim, Okhyeon Kim, Yong Richard Sriwijaya, Khabib Khumaini, Romel Hidayat and Won-Jun Lee\*

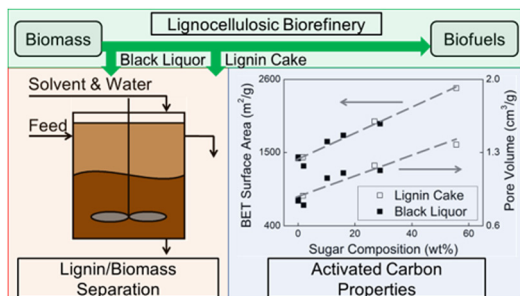
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### Design and investigation of a new two-dimensional cobalt metal-organic framework for highly sensitive electrochemical detection of the nitrofurazone drug in food and biological samples

T. Leelasree and Himanshu Aggarwal\*

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### Decoupling the role of lignin, cellulose/hemi-cellulose, and ash on ZnCl<sub>2</sub>-activated carbon pore structure

Chengjun Wu, Graham W. Tindall, Carter L. Fitzgerald, Mark C. Thies and Mark E. Roberts\*

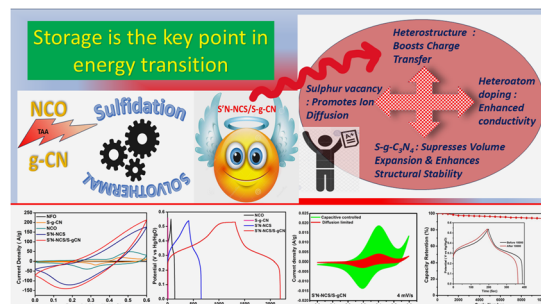




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## Deciphering the electrochemical kinetics of sulfur vacancy-assisted nitrogen-doped NiCo<sub>2</sub>S<sub>4</sub> combined with sulfur-doped g-C<sub>3</sub>N<sub>4</sub> towards supercapacitor applications

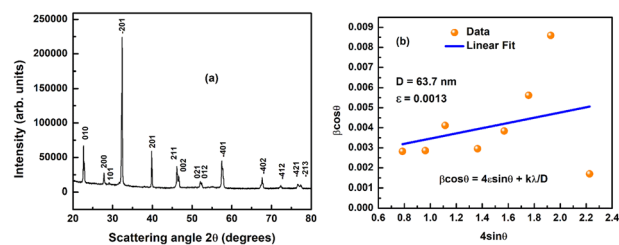
Soumyashree Pany, Amtul Nashim, Ritik Mohanty and Kulamani Parida\*



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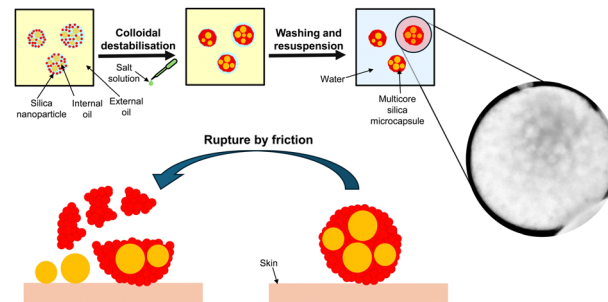
Laxmidhar Sahoo, Swayam Aryam Behera, P. Ganga Raju Achary and S. K. Parida\*



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## Multicore silica microcapsules containing α-tocopherol for potential consumer product applications

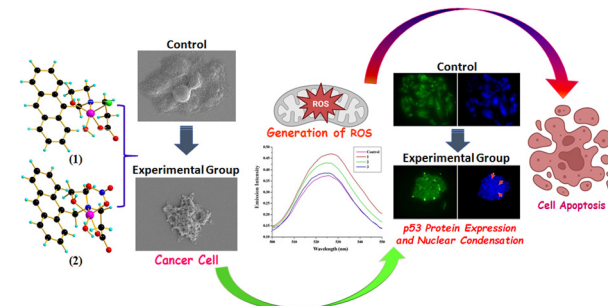
Mohammed Al-Sharabi, Benjamin T. Lobel, Daniele Baiocco, Olivier J. Cayre, Zhibing Zhang and Alexander F. Routh\*



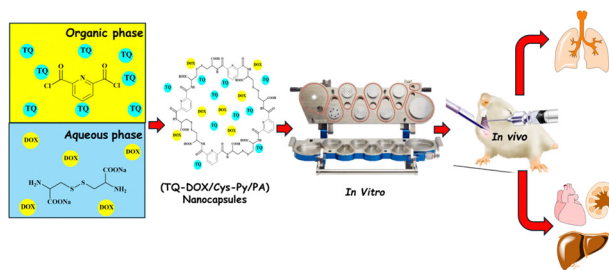
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## A family of zinc compounds of an anthracene-appended new multifunctional organic scaffold as potent chemotherapeutics against cervical cancer

Sujan Sk, Arnob Chakrovorty, Asmita Samadder and Manindranath Bera\*



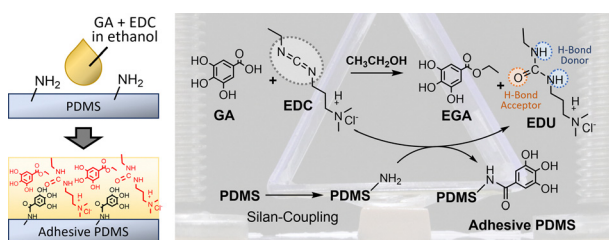
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### Synthesis and preclinical evaluation of novel L-cystine-based polyamide nanocapsules loaded with a fixed-dose combination of thymoquinone and doxorubicin for targeted pulmonary anticancer drug delivery

Hadeel Fayez Banat, Dalia Khalil Ali, Qais Jarrar, Esra'a Alomary and Eman Zmaily Dahmash\*

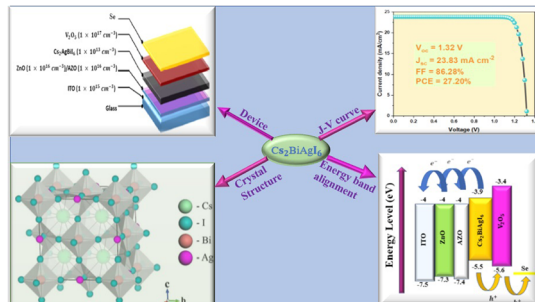
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### Facile coating of low-molecular-weight stretchable adhesive films leveraging carbodiimide-to-urea conversion and gallic acid for enhanced adhesion

Daiki Sekita, Hajime Fujita, Yosuke Mizuno, Tatsuhiro Horii, Takeshi Hata and Toshinori Fujie\*

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### Achieving 27.20% efficiency for a lead-free double perovskite solar cell with all inorganic Cs<sub>2</sub>BiAgI<sub>6</sub> using AZO UTL as a passivation layer

Aminreza Mohandes and Mahmood Moradi\*

