

Materials Advances

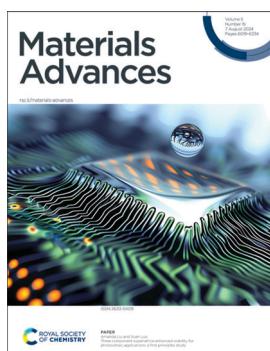
An open access journal publishing across the breadth of materials science

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.

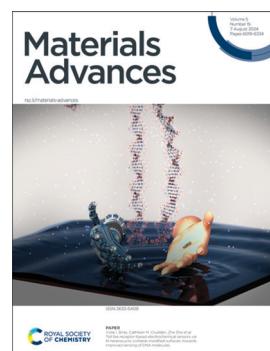
IN THIS ISSUE

ISSN 2633-5409 CODEN MAADC9 5(15) 6019–6334 (2024)



Cover

See Amanda Liu et al.,
pp. 6052–6062.
Image reproduced
by permission of
Amanda Liu
from Mater. Adv.,
2024, 5, 6052.
Image credit: Dr Wei Xu.



Inside cover

See Viola I. Birss,
Cathleen M. Cruden,
Zhe She et al.,
pp. 6063–6069.
Image reproduced
by permission
of Zhe She from
Mater. Adv.,
2024, 5, 6063.
Image credit: Ishwar Singh.

REVIEW

6030

Recent advancements in metal organic framework-modified multifunctional materials for photodynamic therapy

Archana Kumari Pattnaik, Newmoon Priyadarshini,
Priyanka Priyadarshini, Gobinda Chandra Behera and
Kulamani Parida*

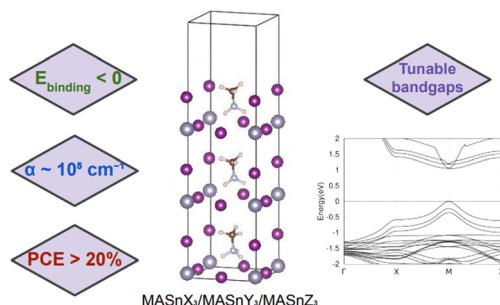


PAPERS

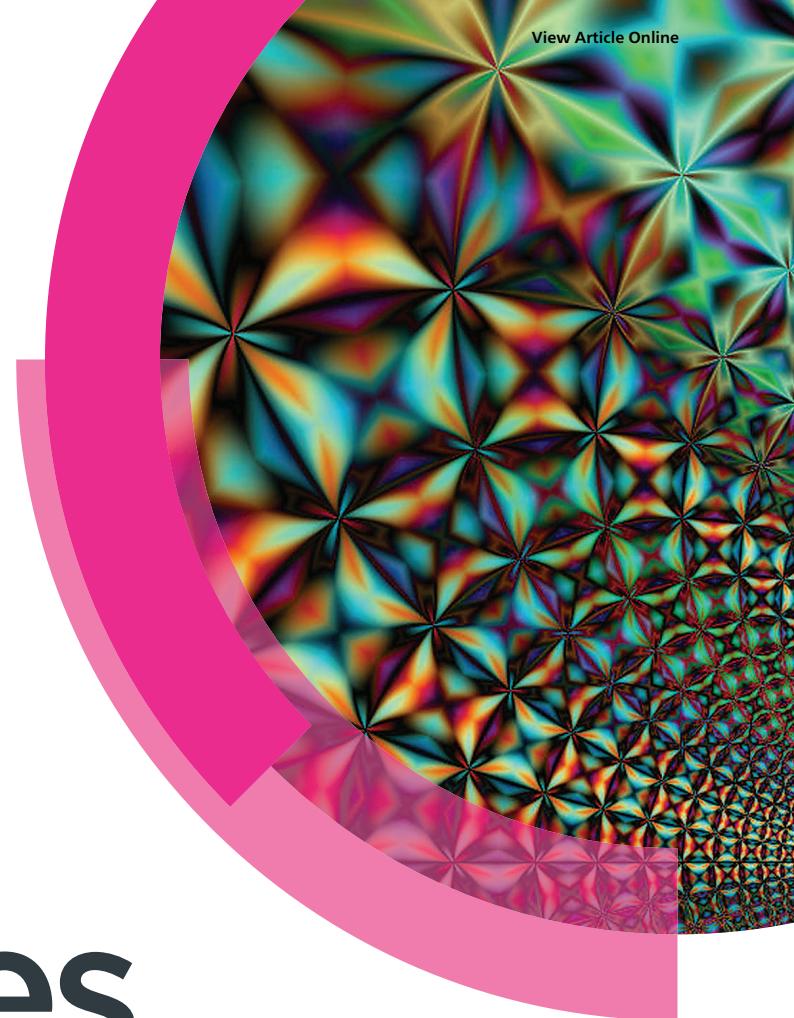
6052

Three component superlattice enhanced stability for photovoltaic applications: a first principles study

Amanda Liu and Xuan Luo*



RSC Advances



**At the heart of open access for
the global chemistry community**

Editor-in-chief

Russell J Cox

Leibniz Universität Hannover, Germany

We stand for:



Breadth We publish work in all areas of chemistry and reach a global readership



Quality Research to advance the chemical sciences undergoes rigorous peer review for a trusted, society-run journal



Affordability Low APCs, discounts and waivers make publishing open access achievable and sustainable



Community Led by active researchers, we publish quality work from scientists at every career stage, and all countries

Submit your work now

rsc.li/rsc-advances

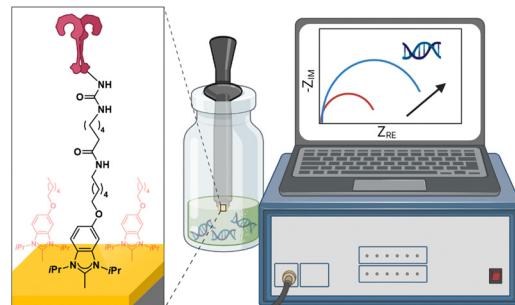
@RSC_Adv

PAPERS

6063

Toll like receptor-based electrochemical sensors via N-heterocyclic carbene-modified surfaces: towards improved sensing of DNA molecules

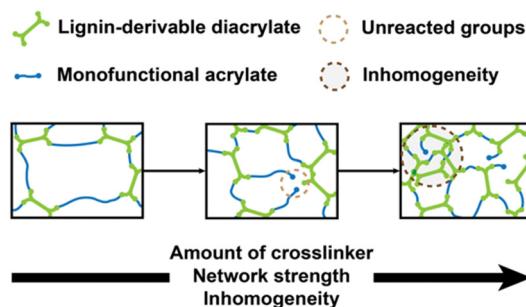
Dianne S. Lee, Mir Pouyan Zarabadi, Hridaynath Bhattacharjee, Lin Qi, Jennifer F. McLeod, Kasra Saeedfar, Ishwar Singh, April Woods, Anastasia Messina, Viola I. Birss,* Cathleen M. Cruden* and Zhe She*



6070

Engineering lignin-derivable diacrylate networks with tunable architecture and mechanics

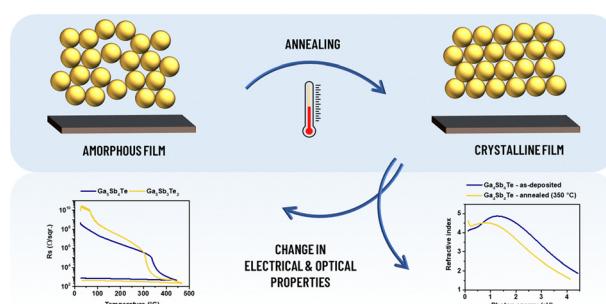
Yu-Tai Wong and LaShanda T. J. Korley*



6081

Co-sputtered phase-change Ga–Sb–Te thin films

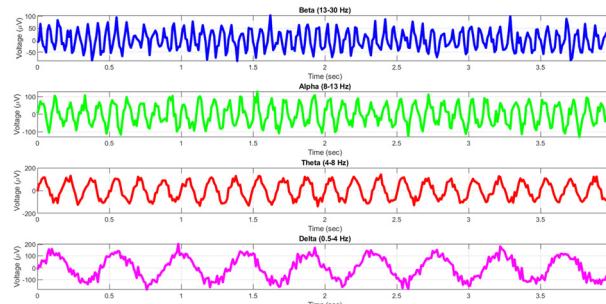
Magdalena Kotrla, Petr Janíček, Jan Gutwirth, Tomáš Halenkovič, Jan Přikryl, Stanislav Šlang, François Chevire, Virginie Nazabal and Petr Němec*



6090

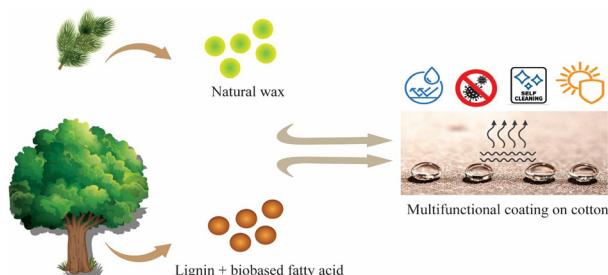
Spike trains in PANI-proteinoid nanomaterials with different light pulse rates

Panagiotis Mougkogiannis* and Andrew Adamatzky



PAPERS

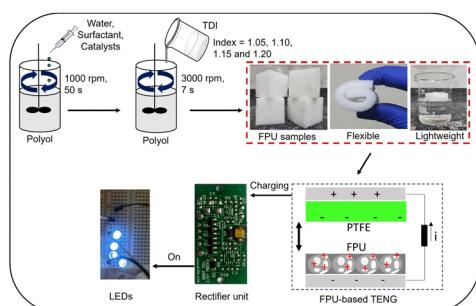
6114



Thin multifunctional coatings for textiles based on the layer-by-layer application of polyaromatic hybrid nanoparticles

Sahar Babaeipour, Paula Nousiainen, Erfan Kimiae, Jenni Tienaho, Nadine Kohlhuber, Risto Korpinen, Kalle Kaipanen and Monika Österberg*

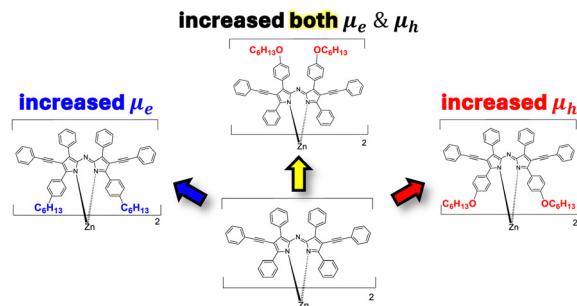
6132



Effect of density and thickness of flexible polyurethane foam on the performance of triboelectric nanogenerators

Ahmed Abdelhamid Maamoun, Ahmed Adel Mahmoud, David Magdy Naeim, Mustafa Arafa* and Amal M. K. Esawi

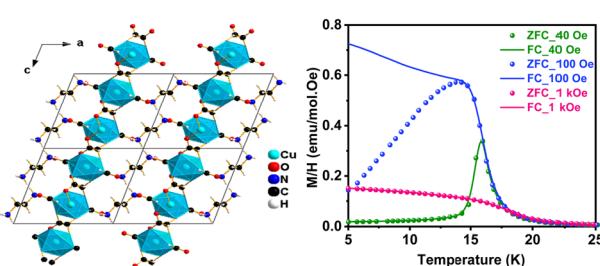
6145



Tuning the charge transport properties of non-planar zinc(II) complexes of azadipyrromethenes using solubilizing groups

Lexi Knight, Jayvic C. Jimenez, Quynh Tran, Muyuan Zhao, Madison H. Pugh, Christina D. Brancel, Honghu Zhang, Ruipeng Li, Yi Yuan, Yuning Li, Lei Zhu and Geneviève Sauvè*

6154



A novel layered Cu-based perovskite metal-organic framework with 1,2-diaminoethane cations: synthesis, crystal structure, and thermal and magnetic properties

Asmae Ben Abdelhadi, Rachid Ouarsal, Morgane Poupon, Michal Dusek, Juan Pedro Andrés González, Luis Lezama, Brahim El Bali, Mohammed Lachkar* and Abderrazzak Douhal*

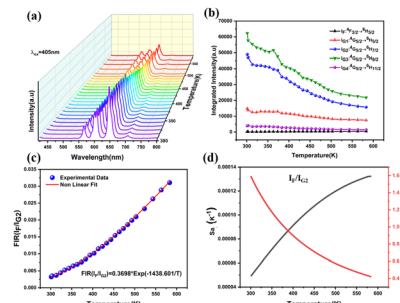


PAPERS

6162

Exploring luminescence quenching mechanisms and temperature sensing capabilities of LiSrYW₃O₁₂:Sm³⁺ phosphors

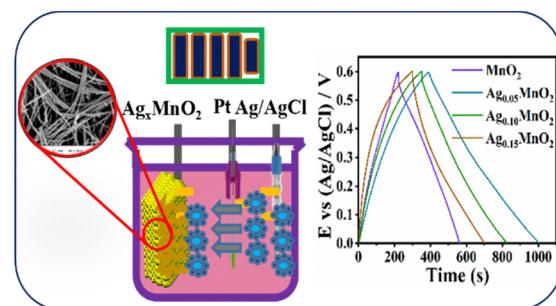
F. Ayachi, K. Saidi and M. Dammak*



6170

Electrochemical performance enhancement of MnO₂ nanowires through silver incorporation for next-generation supercapacitors

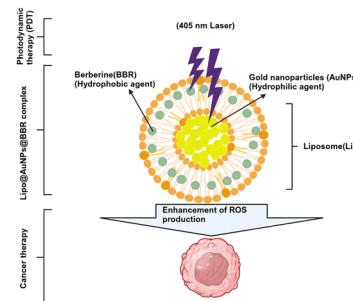
Muhammad Usman Khalid, Sonia Zulfiqar, M. Naziruddin Khan, Imran Shakir, Muhammad Farooq Warsi* and Eric W. Cochran*



6185

Co-delivery of berberine and gold nanoparticles on liposomes for photodynamic therapy against 3D lung cancer cells

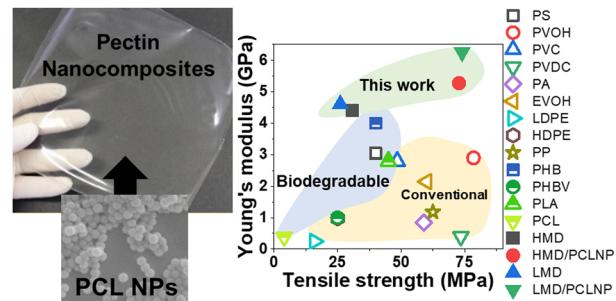
Kave Moloudi, Heidi Abrahamse and Blassan P. George*



6196

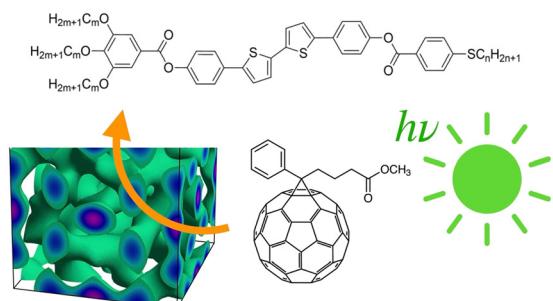
Strengthening eco-friendly packaging from pectin by filling with poly(ϵ -caprolactone) nanoparticles and tailoring the degree of methyl-esterification

Marcos Vinicius Lorevice,* Graziela Solferini Baccarin, Juliana Reghine Souza, Pedro Ivo Cunha Claro, Márcia Regina de Moura, Caio Gomide Otoni* and Luiz Henrique Capparelli Mattoso



PAPERS

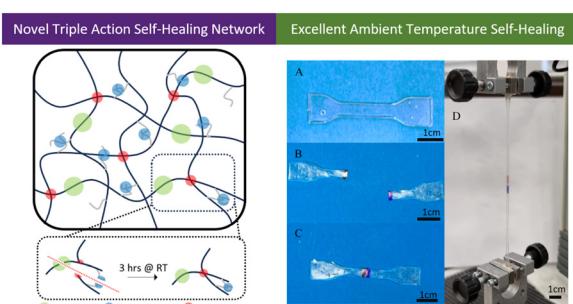
6205



Effect of fullerene doping on electronic and photovoltaic properties of the cubic bicontinuous phase

Ahmad Murad, Mohamed Alaasar,* Ahmed F. Darweesh and Alexey Eremin*

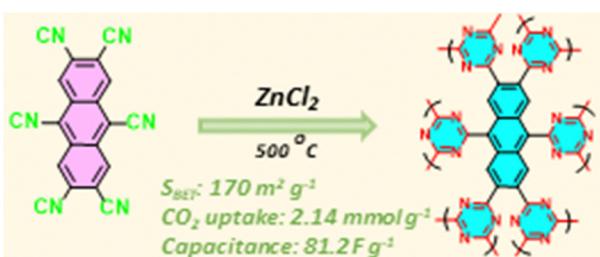
6210



A bio-based thermoplastic polyurethane with triple self-healing action for wearable technology and smart textiles

Thomas Griggs, Jubair Ahmed, Hamta Majd, Mohan Edirisinghe and Biqiong Chen*

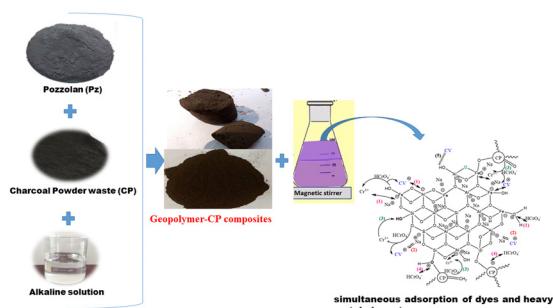
6222



High-performance anthracene-linked covalent triazine frameworks with dual functions for CO₂ capture and supercapacitor applications

Ming-Chieh Lin, Shiao-Wei Kuo* and Mohamed Gamal Mohamed*

6234



Synergistic co-adsorptive removal of crystal violet and chromium(vi) from water by pozzolan-charcoal based geopolymers composites

Jacques Madiba Mboka, Hermann Dzoujo Tamaguelon,* Victor Odhiambo Shikuku, Sylvain Tome, Romain Pokeya, Donald Kamdem Njouond, Fidele Gallo Titini, Aysenur Limon, Christoph Janiak, Marchand Manga Dika, Marie Annie Etoh and David Joh Daniel Dina*

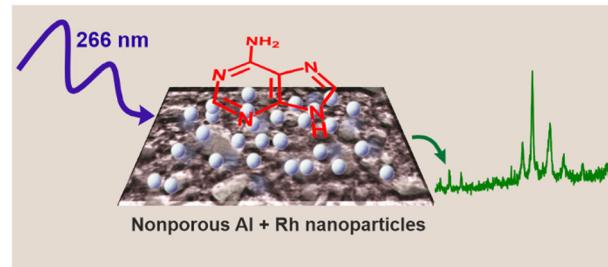


PAPERS

6248

Porous aluminum decorated with rhodium nanoparticles: preparation and use as a platform for UV SERS

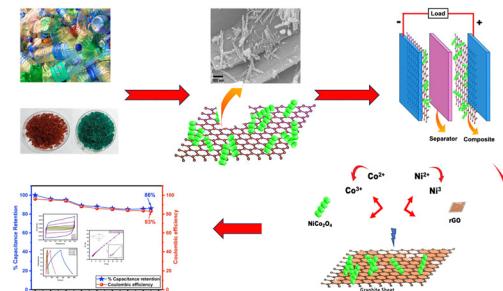
Shrobona Banerjee, Luca Mattarozzi, Nicolò Maccaferri, Sandro Cattarin, Shukun Weng, Ali Douaki, German Lanzavecchia, Anastasia Sapunova, Francesco D'Amico, Qifei Ma, Yanqiu Zou, Roman Krahne, Janina Kneipp and Denis Garoli*



6255

Upcycling waste plastic into 2D-carbon nanomaterials for high-performance supercapacitors by incorporating NiCo_2O_4 : a sustainable approach to renewable energy

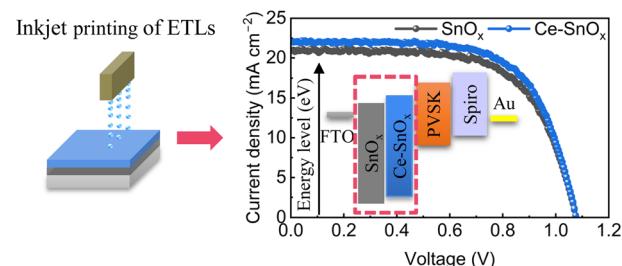
Diksha Bhatt, Mayank Pathak, Nishtha Thakur, Gaurav Tatrari, Tanmoy Rath, Zaher Judeh and Nanda Gopal Sahoo*



6270

Inkjet-printed Ce-doped SnO_x electron transport layer for improved performance of planar perovskite solar cells

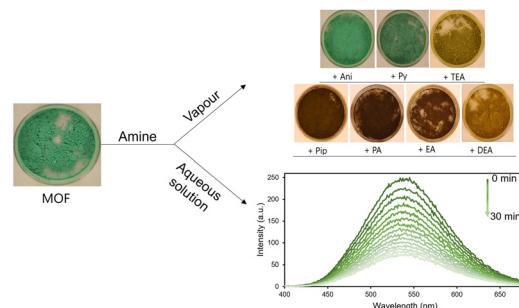
Dongli Lu, Mahboubeh Jamshidi, Chaochao Dun, Jeffrey J. Urban, James M. Gardner and Liubov Belova*



6277

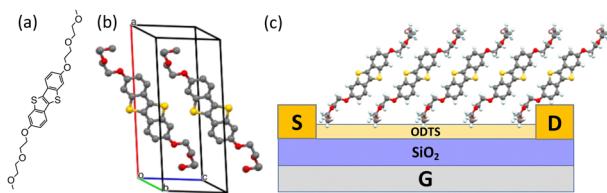
A water-stable copper-based nanosized metal–organic framework for discriminative sensing of amines

Pablo Álvarez García, Enrique Álvarez Rubiera, David Gutiérrez Armayor, Candela Melendreras, Ana Belén Soldado, José Manuel Costa, Elena Lastra* and Fco. J. García Alonso*



PAPERS

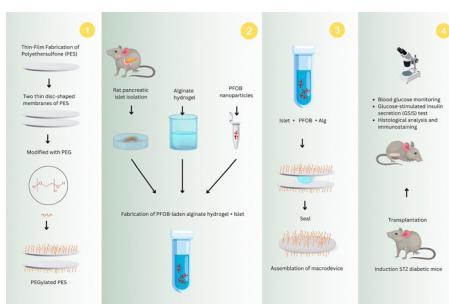
6285



Impact of hydrophilic side chains on the thin film transistor performance of a benzothieno-benzothiophene derivative

Mindaugas Gicevičius,* Ann Maria James, Lukas Reicht, Nemo McIntosh, Alessandro Greco, Lamiaa Fijahi, Félix Devaux, Marta Mas-Torrent, Jérôme Cornil, Yves Henri Geerts, Egbert Zojer, Roland Resel and Henning Sirringhaus*

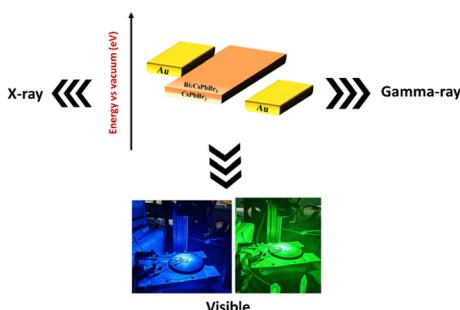
6295



A thin disc-shaped macrocapsule for transplantation of oxygen carrier-laden alginate hydrogel-encapsulated pancreatic islets in diabetic mice

Nasrin Kakaei, Zhila Izadi,* Ghobad Mohammadi,* Abbas Ahmadi,* Roshanak Amirian and Mohammad Raman Moloudi

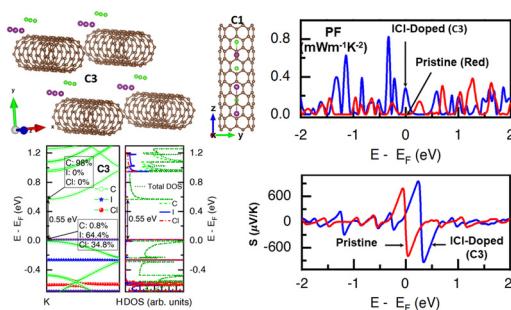
6309



Preparation of bismuth-doped CsPbBr₃ perovskite single crystals for X-ray and gamma-ray sensing applications

Premkumar Sellan,* Manigandan Selvan, Abida Perveen, Din Nasrud, Sakthivel Chandrasekar, Pitchai Kannu Venkatraman, Devaraj Nataraj, Byung Seong Bae, Damian Chinedu Onwudiwe and Lei Wei*

6319



Thermoelectric property enhancement of single-wall carbon nanotube network by ICl intercalation and filling: a first-principles study

Md. Mafizul Islam and Ahmed Zubair*



CORRECTIONS

6330**Correction: *N,N'*-Substituted quinacridones for organic electronic device applications**

Donia Saadi, Felix Mayr, Cigdem Yumusak, Dominik Wielend, Munise Cobet, Bilge Kahraman, Cristian Vlad Irimia, Yasin Kanbur, Mateusz Bednorz, Kamil Kotwica, Amel Ben Fredj, Samir Romdhane, Markus C. Scharber, Niyazi Serdar Sariciftci and Mihai Irimia-Vladu*

6331**Correction: Spike trains in PANI-proteinoid nanomaterials with different light pulse rates**

Panagiotis Mougkogiannis* and Andrew Adamatzky

6332**Correction: Plasmonic nanodendrites stabilized with autologous serum proteins for sustainable host specific photothermal tumor ablation**

Mimansa, Smriti Bansal, Pranjali Yadav and Asifkhan Shanavas*

