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ISSN 1144–0546 CODEN NJCHES 47(28) 13019–13602 (2023)

Cover
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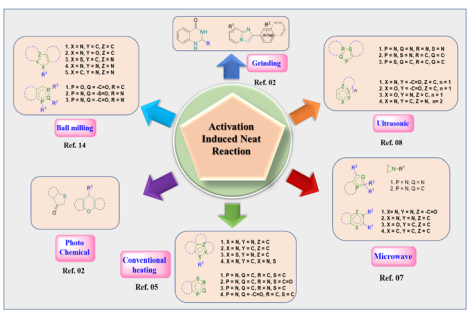
PERSPECTIVE

13035

Recent developments in the solvent-free synthesis of heterocycles

Nilabrata Dey, Arabinda Mandal, Rathin Jana, Anirban Bera, Sk Abulkalam Azad, Soumen Giri,* Mohammed Ikbal* and Shubhankar Samanta*

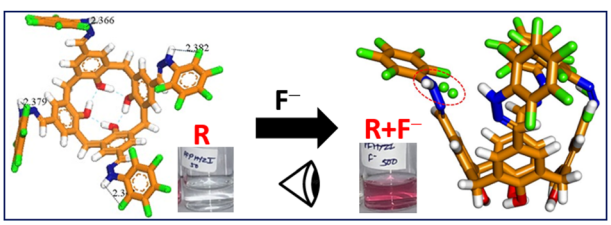


COMMUNICATIONS

13080

Rapid naked eye sensing of fluoride by calix[4]arene upper rim tetra functionalized pentafluorophenyl hydrazone

Anita Nehra, Apoorva Malik, Pragati R Sharma, Sateesh Bandaru* and Rakesh K Sharma*



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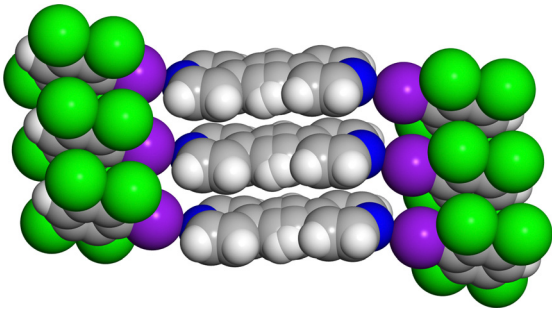
COMMUNICATIONS

13084

Preference of halogen bonds over hydrogen bonds within a discrete three-component co-crystal that undergo a [2+2] cycloaddition reaction

Conrad J. Powell, Eric Bosch, Herman R. Krueger Jr and Ryan H. Groeneman*

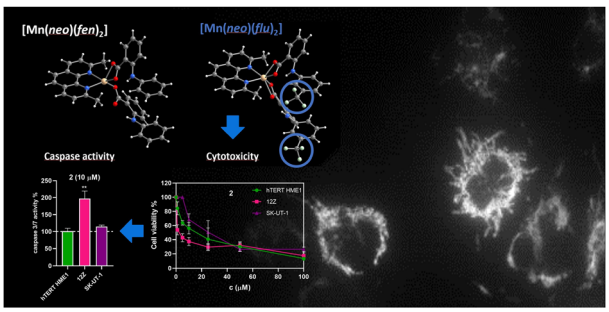


PAPERS

13088

Investigation of novel Mn(II) fenamato complexes with neocuproine and their effects on endometrial cell lines

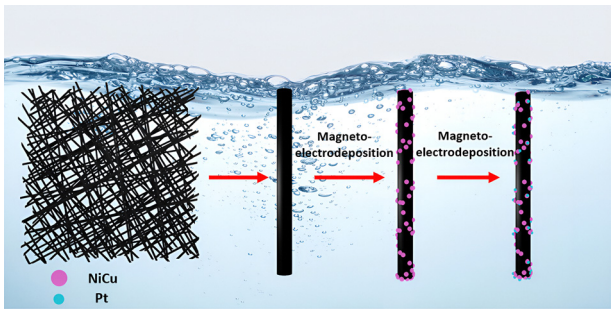
Zuzana Klepcová, Ivana Špaková, Corina T. Madreiter-Sokolowski, Wolfgang Graier, Katarína Kalinová, Erika Samoľová, Romana Smolková, Lukáš Smolko* and Miroslava Rabajdová



13098

Homogenizing of Pt on NiCu films for enhanced HER activity by two-step magneto-electrodeposition

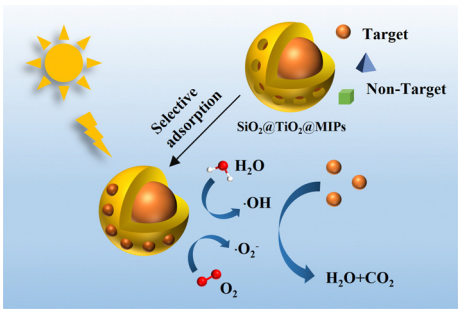
Donggang Li,* Tianlong Shan, Chongguo Liu, Can Zhao, Andrew Doherty, Ali Reza Kamali and Qiang Wang



13106

Efficient identification and degradation of tetracycline hydrochloride from water by molecularly imprinted core–shell structured SiO_2@TiO_2

Zimu Li, Xicheng Li, Shoufang Xu,* Hao Tian and Changzheng Wang*



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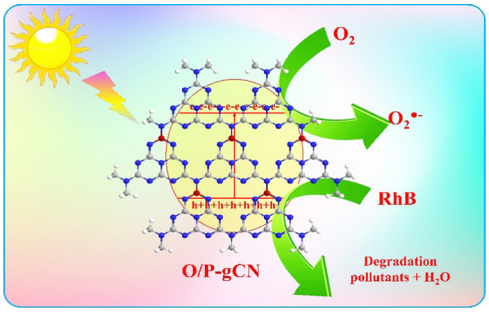
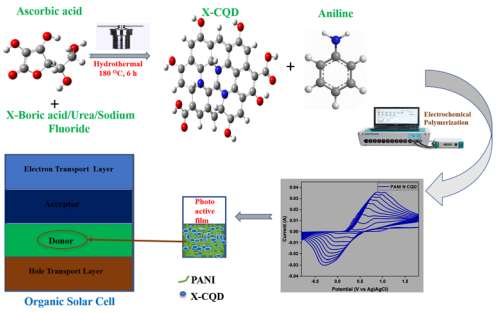


Oxygen-phosphorus-codoped graphitic carbon nitride nanosheets with better photocatalytic ability towards the degradation of rhodamine-B dyes

Zhen-Yuan Lan, Dhanapal Vasu, Yung-Chieh Liu, Yu-Feng You, Te-Wei Chiu* and Po Chou Chen

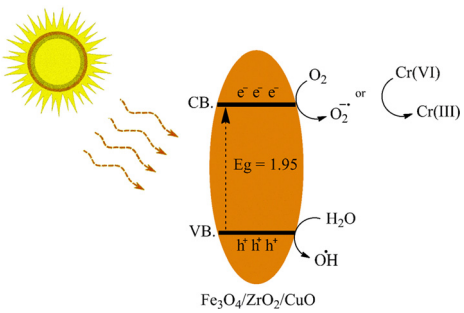
13127



Heteroatom (boron, nitrogen, and fluorine) quantum dot-doped polyaniline-photoactive film preparation and characterization for organic solar cell applications

Esakkimuthu Shanmugasundaram, Vigneshkumar Ganesan, Vimalasruthi Narayanan, Kannan Vellaisamy, Rajaram Rajamohan,* Yong Rok Lee,* Selvam Kaliyamoorthy and Stalin Thambusamy*

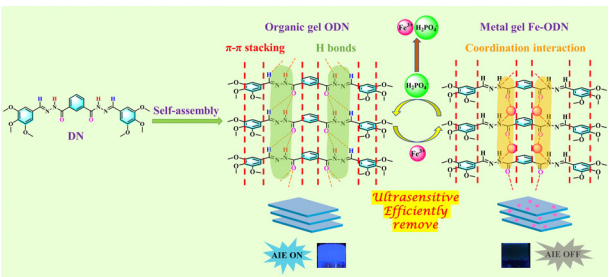
13138



Synthesis of $Fe_3O_4/ZrO_2/CuO$ magnetic nanohybrids and their applications in reducing chromium(VI) and degrading methylene blue under sunlight

Mohammad Amin Arayesh, Ali Hossein Kianfar* and Gholamhossein Mohammadnezhad

13152



A novel acylhydrazone-based self-assembled supramolecular gel for ultrasensitive alternating fluorescence detection of Fe^{3+} and $H_2PO_4^-$

Shang Wu,* Jutao Liu, Shuaishuai Fu, Jiajia Wang, Penghui Zhang, Chaoyang Liu, Yanbin Wang, Qiong Su,* Yuzhi Sun and Quanlu Yang*

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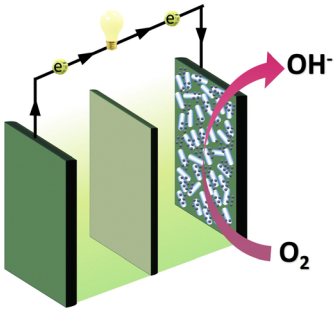
PAPERS

13160

Augmented and sustained oxygen reduction reaction activity of $NiCo_2O_4$ by the incorporation of Ag

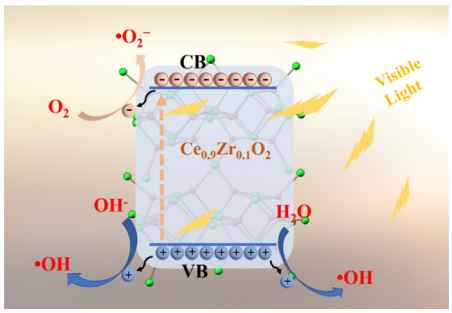
Karuvatta Nubla, Vadakkanethu Sadasivan Anju, Aiswarya Sidharthan K. and N. Sandhyarani*



13169

Photodegradation of methylene blue using $Ce_xZr_yO_2$ nanocomposites prepared *via* a non-stoichiometry method

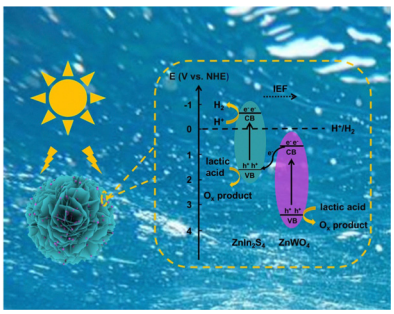
Xingmin Chen, Peishen Li, Shuai Gao, Mingming Sun, Qiang Wang,* Wen Liu and Sihui Zhan*



13177

Boosting the photocatalytic activity of $ZnIn_2S_4$-based photocatalyst for H_2 evolution using porous $ZnWO_4$ nanoflakelets as a cocatalyst

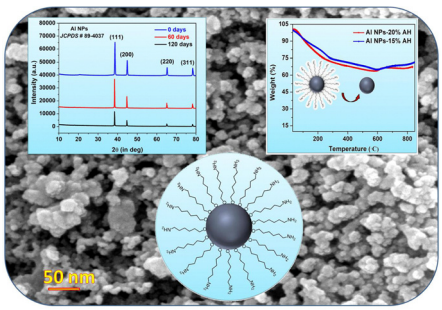
Fengchun Dong, Hui Liu, Lixia Qin, Taiyang Zhang,* Xiangqing Li and Shi-Zhao Kang*



13186

Dual-functional organic surfactant for the effective stabilization of nano aluminium

Billakanti Srinivas, Bantumelli Prachuritha, Vepa Kameswara Rao and Krishnamurthi Muralidharan*



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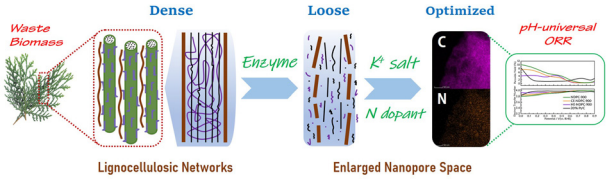
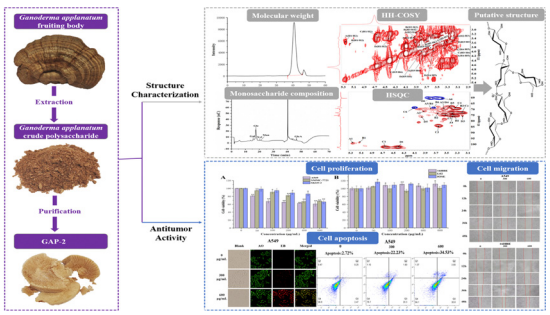


Exploiting enzymes to optimize the pH-universal electrocatalytic ORR performance of biomass-based nanoporous carbons

Huifen Wang, Xiao Kong, Wendu Zhang, Peiyao Bai, Chuangchuang Yang, Weiqi Liu, Shilin Wei and Lang Xu*

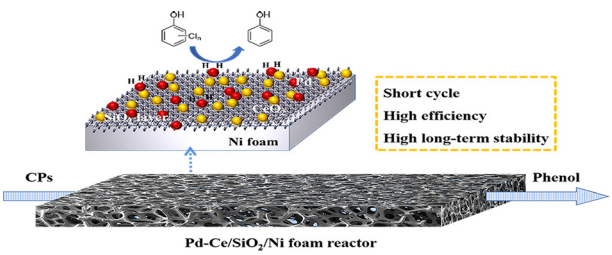
13205



Structural features and *in vitro* antitumor activity of a water-extracted polysaccharide from *Ganoderma applanatum*

Zan Gong, Meng Liu, Hui Liu, Zhiwei Deng, Xiangxiang Qin, Jing Nie, Zhe Qiao, Hua Zhu* and Shian Zhong*

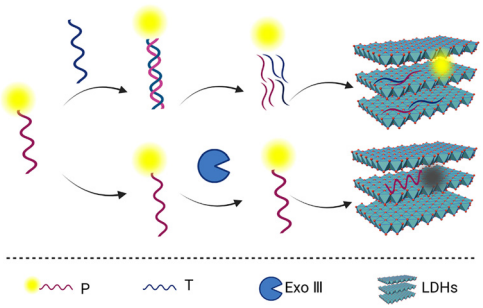
13218



Highly efficient and stable hydrodechlorination of chlorophenols in a flow Pd–Ce/SiO_2/Ni foam reactor

Ruijie Cheng, Linyu Li, Lizhi Tan, Haozhen Feng, Guangyan Xiang and Jun Xiong*

13228



A versatile fluorescence sensor for DNA detection based on layered double hydroxides and exonuclease III

Yuanyi Wu, Shihan Liu, Yumei Xiao, Qian Li, Qin Xiang, Xianqin Song, Shanglin Wu, Kaiyong Wang* and Yi Yang*

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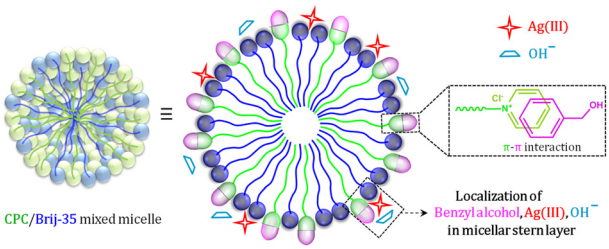
PAPERS

13235

An efficient mixed micellar strategy for the catalytic oxidation of benzyl alcohol by diperiodatoargentate(III) in aqueous media

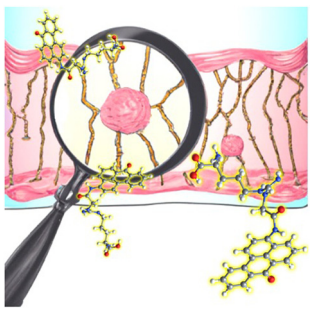
Priya Karmakar, Sandip Kundu, Mousumi Layek, Kripasindhu Karmakar, Mandira Mitra, Arnab Mukherjee, Debasis Dhak, Ujjwal Mandal,* Pintu Sar* and Bidyut Saha*



13247

Computational assessment of amino acid-coupled benzanthrone 2-aminoacetamides as molecular probes for insulin amyloid fibril visualization

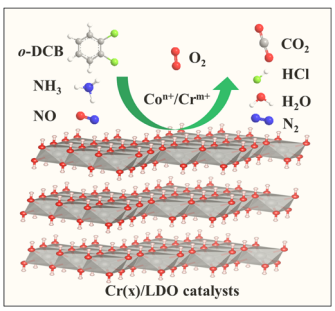
Reshma Rensil Francis, Cheriyan Ebenezer, Rajadurai Vijay Solomon* and Paul Wilson*



13260

***In-situ* DRIFTs study for synergistic removal of NOx and *o*-DCB over hydrotalcite-like structured Cr(*x*)/LDO catalysts**

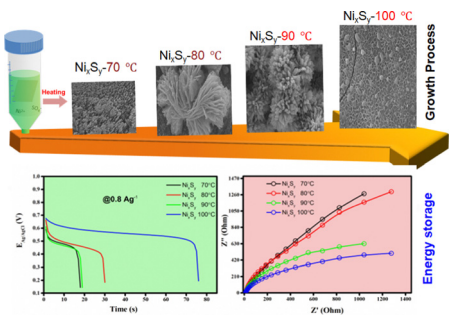
Jiaqing Wang, Yi Xing,* Hui Zhang, Wei Su,* Jinglei Tian, Wenbo Zhang, Haoqi Jia, Yan Wang and Mengying Ma



13269

Shape controlled growth of hierarchical Ni_xS_y on stainless steel by solution processing with enhanced electrochemical energy storage performance

Amjad Khan, Gul Rahman,* Anwar ul Haq Ali Shah, Sang Youn Chae and Shabeer Ahmad Mian



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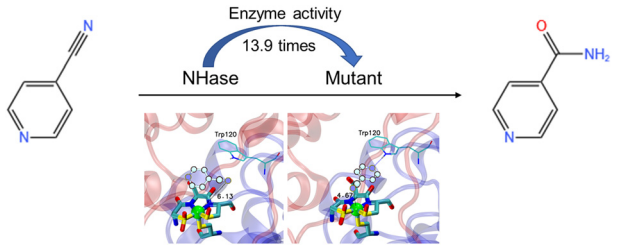
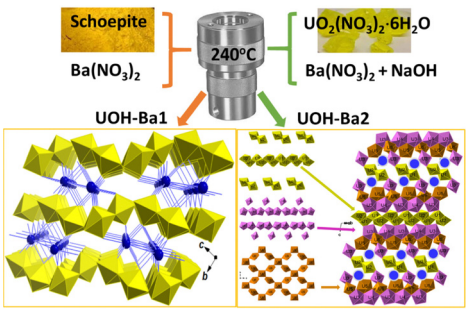


Highly efficient biosynthesis of isonicotinamide through a substrate access tunnel engineered nitrile hydratase from *Carbonactinospora thermoautotrophicus*

Junling Guo, Zhongyi Cheng, Lukasz Peplowski* and Zhemin Zhou*

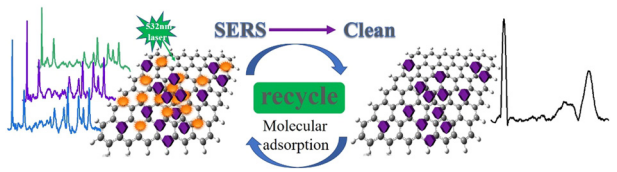
13286



Investigation of uranium oxide hydrates with barium(II) ions: structural diversity, uranium valences and implications

Kimbal T. Lu, Yingjie Zhang,* Tao Wei, Timothy A. Ablott, Jakub Plášil, Inna Karatchevtseva and Rongkun Zheng

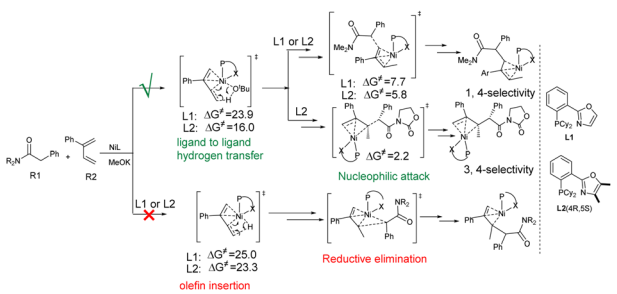
13297



Recyclable non-metal surface-enhanced Raman scattering substrate based on graphene oxide/ZIF-67 nanocomposites

Shuang Wang, Xiaoya Zhang, Qun Xiang, Sijie Zhou, Jun Zheng, Ruiwen Yan* and Guiqi Gao*

13303



Theoretical studies on substrate-controlled selectivity of nickel-catalyzed hydroalkylation of 1,3-dienes

Yuhua Liu, Difei Liu, Senyu He, Xiaofeng Huang, Feiqing Ding* and Yang Zhang*

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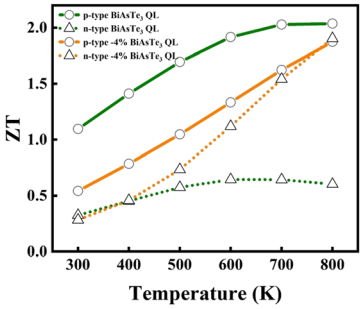
PAPERS

13309

Substituted (P, As, Sb, S and Se) two-dimensional Bi_2Te_3 monolayer under stress at high temperature: achieving high thermoelectric performance

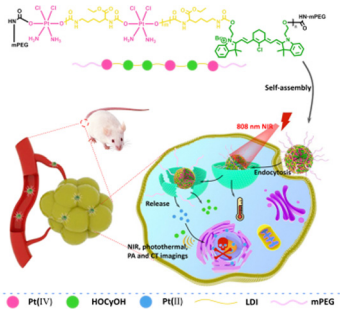
Ting Li, Jie Pu, Tianwen Yu, Ziyu Hu* and Xiaohong Shao*



13320

Tailoring dual drug-backboned polyurethane prodrug nanoparticles as all-in-one nanomedicine for precise multimodal imaging-guided PTT-chemotherapy

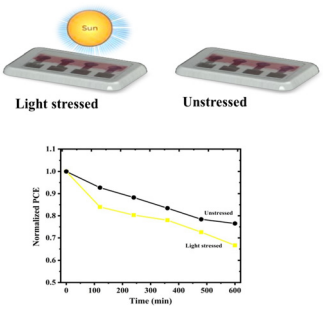
Guozheng Liu, Jiazhen Wu, Siyuan Liu, Mingming Luan, Jing Xu and Yanjuan Wu*



13331

Effect of an ambient environment on light-induced degradation of organic solar cells based on a benzodithiophene–quinoxaline copolymer in air

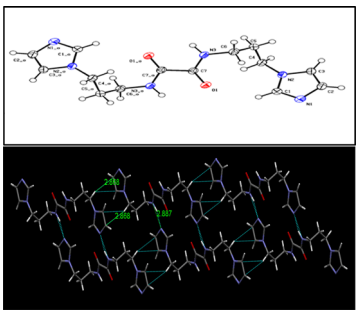
Kidan G. Gebremariam, Fikadu G. Hone, Jane Dai, Genene T. Mola, Wendimagegn Mammo and Newayemedhin A. Tegegne*



13342

An oxalamide-bridged imidazole based 'turn off' fluorescent receptor for copper(II) and iron(III) ions

Parvathavarthini Murugaperumal, Praveena Rajendran, Sengottuvelan Nallathambi,* Siva Ayyanar, Franc Perdih, Ashokkumar Balasubramaniem and Arun Alagarsamy



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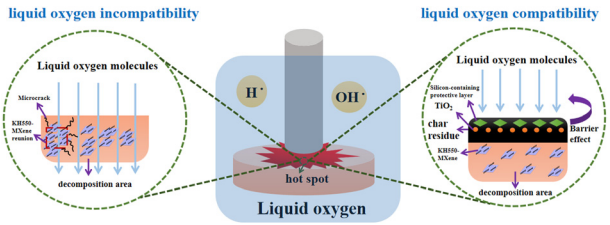
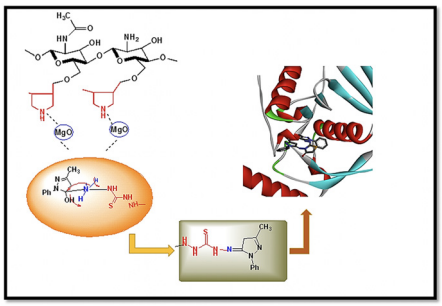
13353



Siloxane-decorated MXene nanosheet-reinforced EP composites with outstanding flame retardancy and liquid-oxygen compatibility for ultra-low-temperature applications

Hui Wang, Ni Liu, Lijie Qu* and Baosheng Xu*

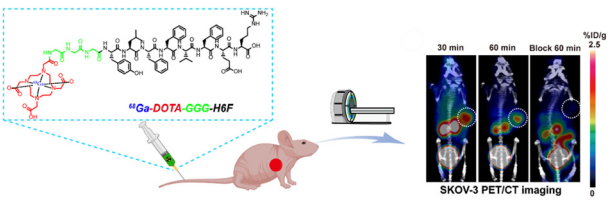
13367



Use of a bioresource nanocomposite as a heterogeneous base catalyst for the green synthesis of novel bioactive pyrazoles: antibacterial evaluation using molecular docking

Sarah Aldulaijan, Sara Nabil, Salha Alharthi, Bushra AL Abdullatif and Abir S. Abdel-Naby*

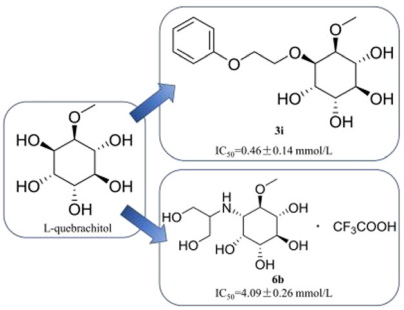
13378



A preliminary study of a ^{68}Ga-labeled PET probe for HER2 imaging

Kaiwen Chen, Xiangwei Wang, Xiaoping Xu,* Xiao Wang, Simin He, Jianping Zhang, Yuyun Sun, Shiping Yang and Shaoli Song*

13387



Design, synthesis and evaluation of L-quebrachitol derivatives against α-glycosidase

Maoying Zhang, Xinjie Liang, Pengcheng Cai, Qixun Feng, Yongsong Chen, Xiaoxi Yu, Kuo Zhang,* Xuefei Bao* and Guoliang Chen*

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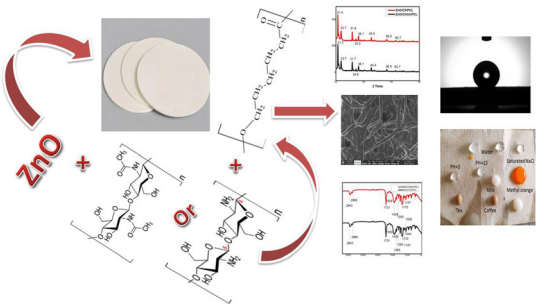
13397

ZnO nano grafted chitin–chitosan based hybrid composite coated super hydrophobic filter paper for water flow cleaning and oil–water separation applications

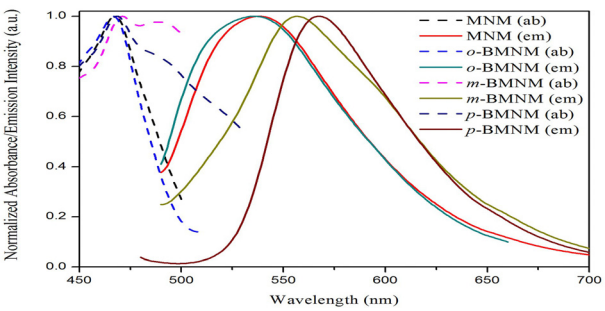
V. Selvaraj,* T. Swarna Karthika, C. Mansiya and M. Alagar



13409

Evaluating the isomeric effects of donors on the structures and photophysical properties of donor–acceptor–π bridge–donor (D1–A–π–D2) prototype fluorophores

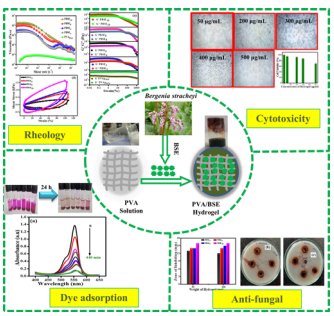
Dong-En Wu and Qing-Hui Guo*



13422

A composite polyvinyl alcohol–medicinal plant extract crosslinked hydrogel: a novel soft system with excellent rhodamine B adsorption and significant antifungal activity

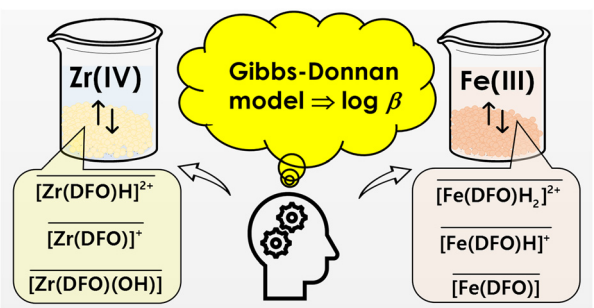
Umar Nabi Tak, Showkat Rashid, Firdaus Ahmad Ahangar, Pawandeep Kour, Arjumund Shaheen, Saima Sidiq, Gousia, Ayaz Ahmad Manhas, Nighat Nazir and Aijaz Ahmad Dar*



13436

Kinetic and thermodynamic sorption studies of Fe(III) and Zr(IV) by DFO@Purolite, a desferrioxamine B based chelating resin

Giancarla Alberti,* Camilla Zanoni, Vittorio Losi, Sara Rovertoni, Lisa Rita Magnaghi, Osian Fonquernie, Stéphane Brandès, Agnese Amati, Jean-Claude Chambron, Nicolas Maudoux, Raffaela Biesuz and Michel Meyer*



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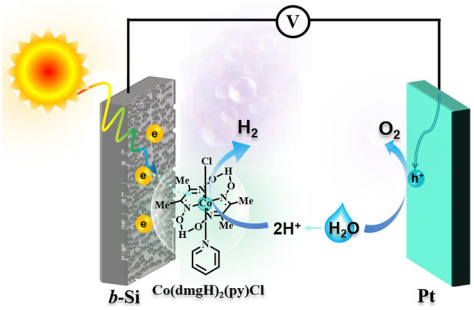
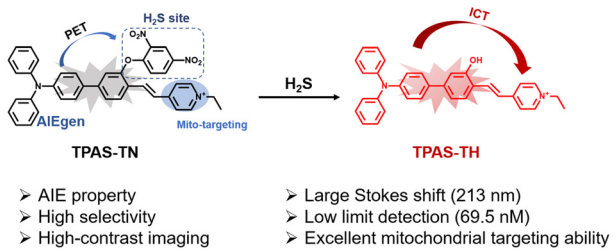
13450



Nanoporous silicon photocathodes with [Co] molecular catalyst for enhanced solar-driven hydrogen generation

Luo-Han Xie, Fentahun Wondu Dagnaw, Ming-Ming Yao, Yi-Jing Chen, Jing Chen, Jing-Xin Jian* and Qing-Xiao Tong*

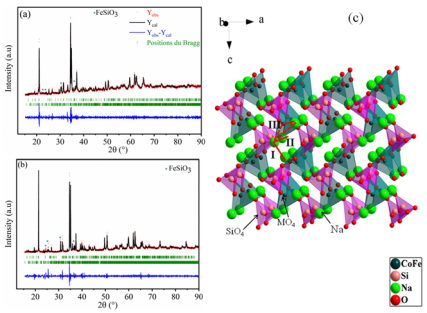
13456



A mitochondria-targeting "off–on" AIE probe with large Stokes shift for high-contrast H_2S imaging in living cells

Yun Chen, Qiqi Xu, Weijun Zhao* and Chengyun Wang*

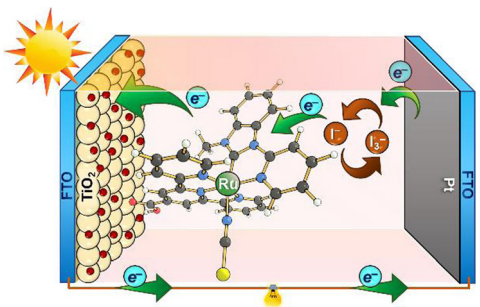
13462



Doping Fe at the Co-tetrahedra site to improve the microstructure, optical, and Na-ion migrations in $Na_2Co_{1-x}Fe_xSiO_4$

Kawthar Trabelsi,* Karim Karoui, Abdelfattah Mahmoud, Frédéric Boschini and Abdallah Ben Rhaiem

13476



Heteroleptic ruthenium(II) complexes featuring *N*-heterocyclic carbene-based C^N donor sets for solar energy conversion

Nimisha Jain, Angelina Mary, Tanu Singh, Srushti Gadiyaram, D. Amilan Jose and Abbas Raja Naziruddin*

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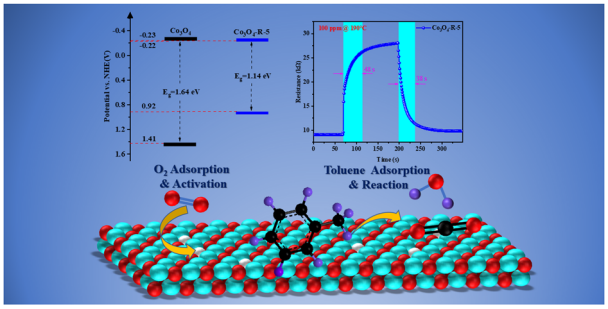
13486

Enhanced toluene sensing performances over commercial Co_3O_4 modulated by oxygen vacancy *via* $NaBH_4$-assisted reduction approach

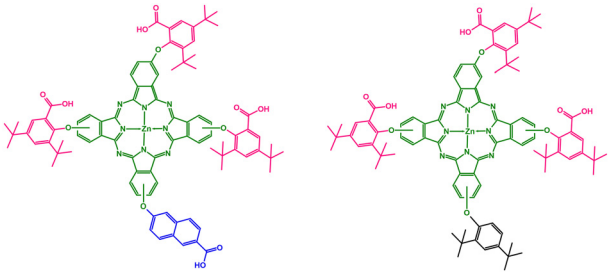
Liang Zhao, Congcong Xin, Zhimin Yang, Yaqing Zhang, Yunpeng Xing, Zefeng Wei, Teng Fei, Sen Liu* and Tong Zhang*



13497

Effects of anchoring and spacer groups of asymmetric zinc phthalocyanines on the photovoltaic performance of dye-sensitized solar cells

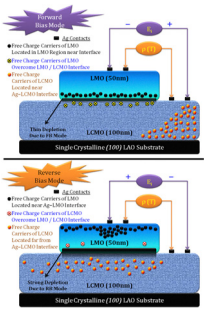
Gülşah Gümrükçü Köse, Gülnur Keser Karaoğlan, Yaren Erdağ Maden and Atıf Koca*



13508

Interface based field effect configuration and charge conduction mechanisms for manganite thin film heterostructures

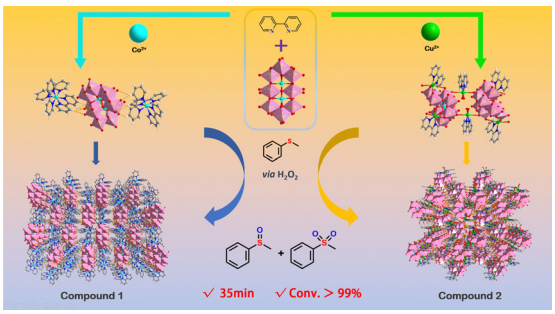
Bhargav Rajyaguru, Hardik Gohil, Himanshu Dadhich, Keval Gadani, V. G. Shrimali, R. J. Choudhary, D. M. Phase, N. A. Shah and P. S. Solanki*



13528

Two novel supramolecular structures of Evans–Showell type polyoxometalate for heterogeneous and efficient catalytic conversion of different sulfides

Haiyan An,* Yaohui Huang, Yanhong Chen, Qingshan Zhu and Yuting Wei



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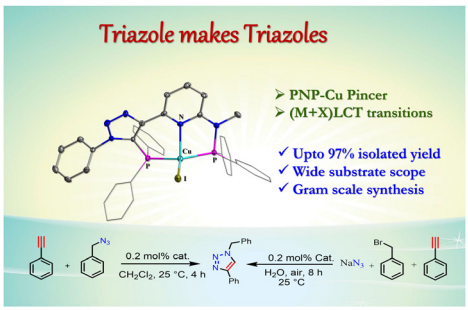
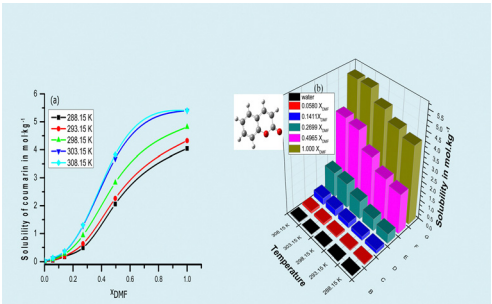
13538



1,2,3-Triazolyl bisphosphine with pyridyl functionality: synthesis, copper(I) chemistry and application in click catalysis

Sonu Sheokand, Manali A. Mohite, Dipanjan Mondal, Shalini Rangarajan and Maravanji S. Balakrishna*

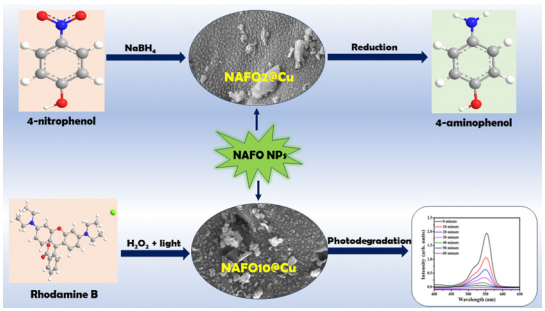
13547



Exploring the solubility and solvation thermodynamics of coumarin in a range of aqua-organic solvents

Sintu Ganai,* Puspal Mukherjee, Kalachand Mahali, Avishek Saha, Aslam Hossain, A. V. Soldatov, A. M. A. Henaish, Jahangeer Ahmed and Sanjay Roy*

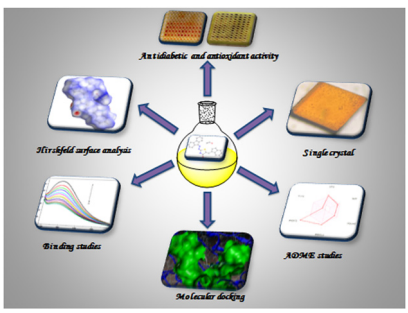
13558



Impact of copper immobilization on dramatic conversion of inactive $NiAlFeO_4$ to an active catalyst for reduction of nitrophenols and a visible light photocatalyst for effective removal of organic contaminants from waste water

Ujwal Manhas, Shikha Sharma, Sumit Singh, Irfan Qadir, Amit Kumar Atri and Devinder Singh*

13581



Fluorenone–thiazolidine-4-one scaffolds as antidiabetic and antioxidant agents: design, synthesis, X-ray crystal structures, and binding and computational studies

Manasa A. Doddagaddavalli, Veerendra Kumar A. Kalalbandi, T. R. Ravi Naik, Shrinivas D. Joshi and Jaldappagari Seetharamappa*

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