

Nanoscale Horizons

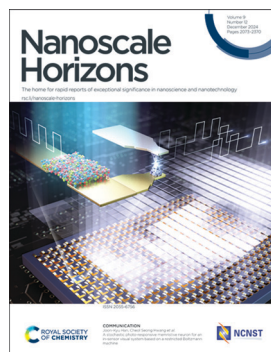
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**Dr Valentina Castagnola, Italian Institute of
Technology, Italy**



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Dr Pengzhan Sun, University of Macau, China



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Fundamental questions
Elemental answers

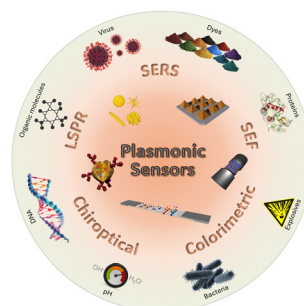


REVIEWS

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Plasmonic nanoparticle sensors: current progress, challenges, and future prospects

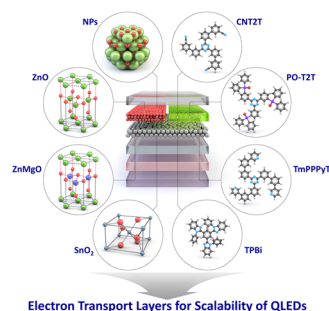
K. Kant, R. Beeram, Y. Cao, P. S. S. dos Santos, L. González-Cabaleiro, D. García-Lojo, H. Guo, Y. Joung, S. Kothadiya, M. Lafuente, Y. X. Leong, Y. Liu, Y. Liu, S. S. B. Moram, S. Mahasivam, S. Maniappan, D. Quesada-González, D. Raj, P. Weerathunge, X. Xia, Q. Yu, S. Abalde-Cela, R. A. Alvarez-Puebla, R. Bardhan, V. Bansal, J. Choo, L. C. C. Coelho, J. M. M. de Almeida, S. Gómez-Graña, M. Grzelczak, P. Herves, J. Kumar, T. Lohmueller, A. Merkoçi, J. L. Montaña-Priede, X. Y. Ling, R. Mallada, J. Pérez-Juste, M. P. Pina, S. Singamaneni, V. R. Soma, M. Sun, L. Tian, J. Wang, L. Polavarapu* and I. P. Santos*



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Recent progresses and challenges in colloidal quantum dot light-emitting diodes: a focus on electron transport layers with metal oxide nanoparticles and organic semiconductors

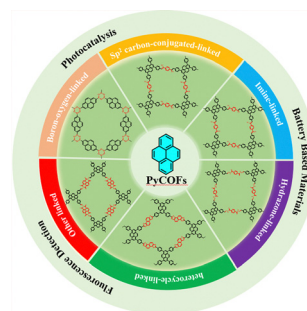
Jaehoon Kim



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Pyrene-based covalent organic frameworks (PyCOFs): a review

Yao Yang, Shiqiong Peng, Songhua Chen,* Fangyuan Kang, Jun Fan, Huan Zhang, Xianglin Yu, Junbo Li* and Qichun Zhang*

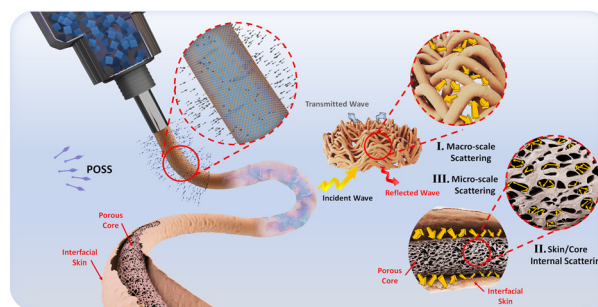


FOCUS

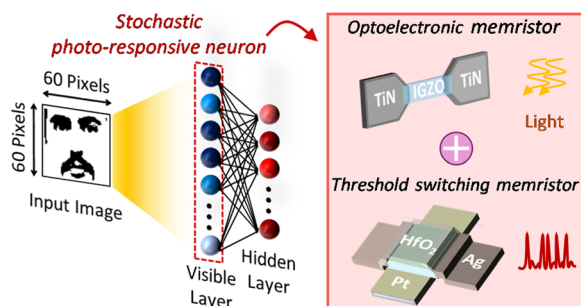
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Crucial role of structural design on performance of cryogel-based EMI shields: an experimental review

Sara Rostami, Ahmadreza Ghaffarkhah, Seyyed Alireza Hashemi, Stefan Wuttke, Orlando J. Rojas and Mohammad Arjmand*



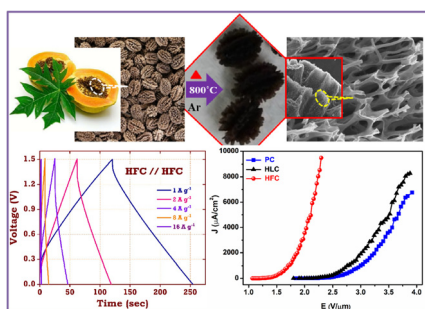
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A stochastic photo-responsive memristive neuron for an in-sensor visual system based on a restricted Boltzmann machine

Jin Hong Kim, Hyun Wook Kim, Min Jung Chung, Dong Hoon Shin, Yeong Rok Kim, Jaehyun Kim, Yoon Ho Jang, Sun Woo Cheong, Soo Hyung Lee, Janguk Han, Hyung Jun Park, Joon-Kyu Han* and Cheol Seong Hwang*

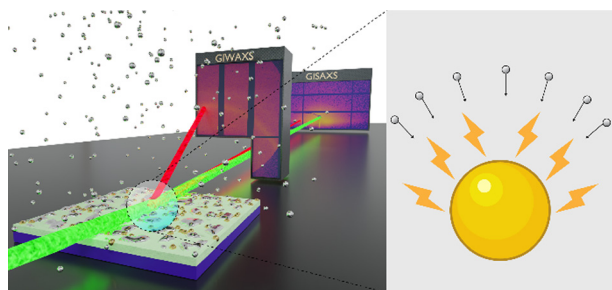
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Surface modification of a biomass-derived self-supported carbon nano network as an emerging platform for advanced field emitter devices and supercapacitor applications

Pallavi Mutadak, Amol Vedpathak, Sambhaji Warule,* Nilima Chaudhari, Shrikrishna Sartale, Mahendra More* and Dattatray J. Late*

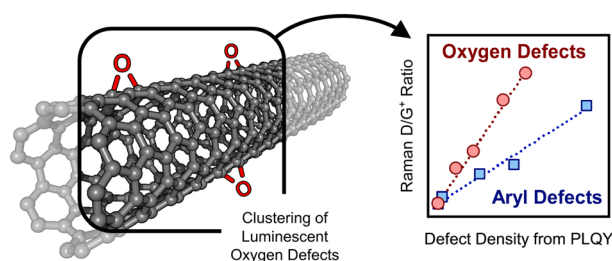
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In situ studies revealing the effects of Au surfactant on the formation of ultra-thin Ag layers using high-power impulse magnetron sputter deposition

Suzhe Liang, Tianfu Guan, Shanshan Yin, Suo Tu, Renjun Guo, Yusuf Bulut, Kristian A. Reck, Jonas Drewes, Wei Chen, Thomas Strunskus, Matthias Schwartzkopf, Franz Faupel, Stephan V. Roth, Ya-Jun Cheng and Peter Müller-Buschbaum*

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How to recognize clustering of luminescent defects in single-wall carbon nanotubes

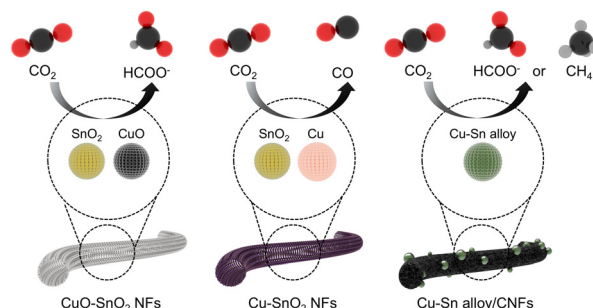
Finn L. Sebastian, Simon Settele, Han Li, Benjamin S. Flavel and Jana Zaumseil*



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Thermodynamic phase control of Cu–Sn alloy electrocatalysts for selective CO₂ reduction

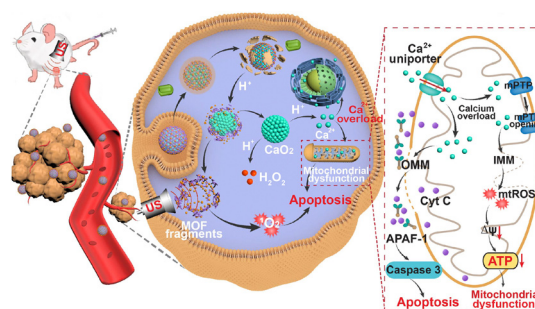
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Biodegradable persistent ROS-generating nanosensitizers for enhanced synergistic cancer therapy by inducing cascaded oxidative stress

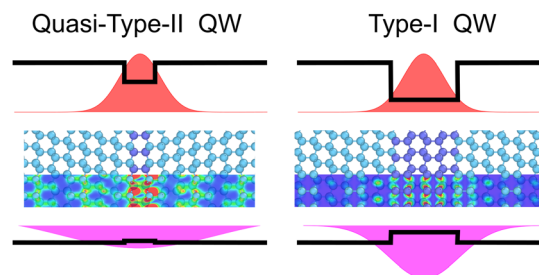
Yue Chen, Tong Ding, Zhengzheng Qian, Zerui Ma, Liming Zhou, Zhiling Li, Runkai Lv, Yinghui Xu, Yingjie Xu, Linhui Hao, Chen Zhu,* Xikuan Yao,* Wenyong Yu* and Wenpei Fan*



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Polytypic quantum wells in Si and Ge: impact of 2D hexagonal inclusions on electronic band structure

Anna Marzegalli, Francesco Montalenti and Emilio Scalise*

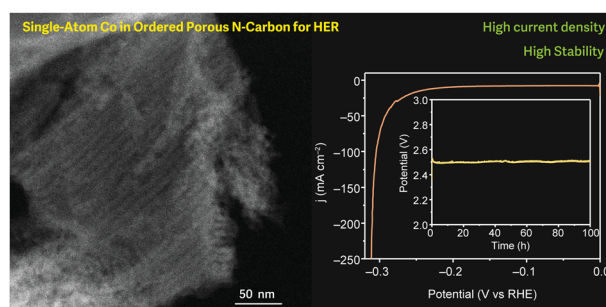


Direct band gap 2D-hexagonal Ge insertions

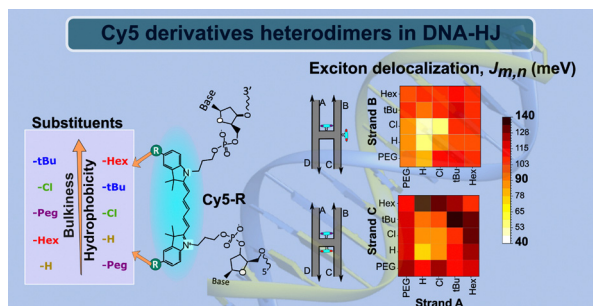
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Improved high-current-density hydrogen evolution reaction kinetics on single-atom Co embedded in an order pore-structured nitrogen assembly carbon support

Jiaqi Yu, Yu Yan, Yuemin Lin, Hengzhou Liu, Yuting Li, Shaohua Xie, Simin Sun, Fudong Liu, Zhiguo Zhang, Wenzhen Li, Jin-Su Oh, Lin Zhou, Long Qi,* Bin Wang* and Wenyu Huang*



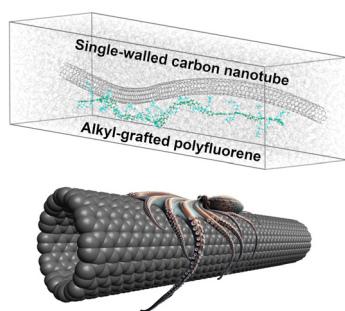
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Towards tunable exciton delocalization in DNA Holliday junction-templated indodicarbocyanine 5 (Cy5) dye derivative heterodimers

Gissela Pascual, Sebastián A. Díaz,* Simon K. Roy, Adam Meares, Matthew Chiriboga, Kimihiro Susumu, Divita Mathur, Paul D. Cunningham, Igor L. Medintz, Bernard Yurke, William B. Knowlton, Joseph S. Melinger* and Jeunghoon Lee*

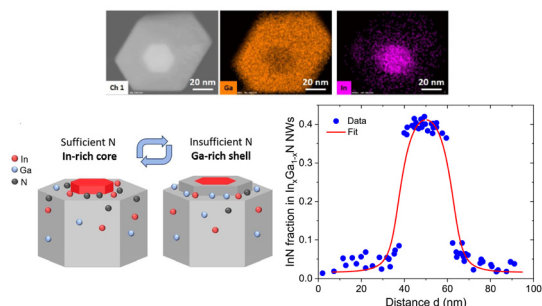
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Explicating conjugated polymer extraction used for the differentiation of single-walled carbon nanotubes

Dominik Just,* Tomasz Wasiak, Andrzej Dzieńia, Karolina Z. Milowska, Anna Mielańczyk and Dawid Janas*

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Instantaneous growth of single monolayers as the origin of spontaneous core-shell $\text{In}_x\text{Ga}_{1-x}\text{N}$ nanowires with bright red photoluminescence

Vladimir G. Dubrovskii,* George E. Cirlin, Demid A. Kirilenko, Konstantin P. Kotlyar, Ivan S. Makhov, Rodion R. Reznik and Vladislav O. Gridchin

