

Journal of Materials Chemistry B

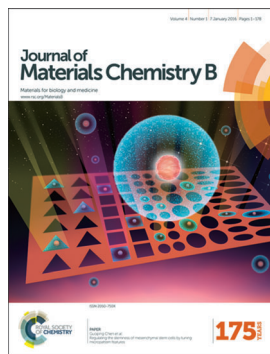
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IN THIS ISSUE

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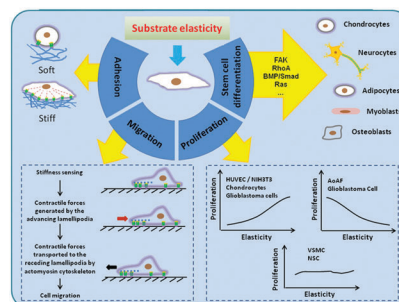
REVIEW

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Cellular modulation by the elasticity of biomaterials

Fengxuan Han, Caihong Zhu, Qianping Guo,
Huilin Yang and Bin Li*

The elasticity of the extracellular matrix has been increasingly recognized as a dominating factor of cell fate and activities. This review provides an overview of the general principles and recent advances in the field of matrix elasticity-dependent regulation of a variety of cellular activities and functions, the underlying biomechanical and molecular mechanisms, as well as the pathophysiological implications.



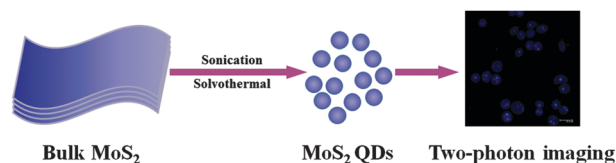
COMMUNICATIONS

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A facile and one-step ethanol-thermal synthesis of MoS₂ quantum dots for two-photon fluorescence imaging

Wei Gu, Yinghan Yan, Xuni Cao, Cuiling Zhang,*
Caiping Ding and Yuezhong Xian*

MoS₂ quantum dots with two-photon fluorescence features are synthesized through a one-step solvothermal approach and successfully used for cellular bioimaging.



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Journal of Materials Chemistry B

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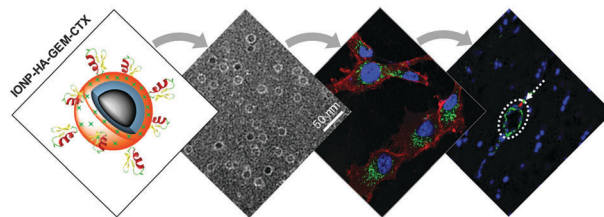
COMMUNICATIONS

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Gemcitabine and chlorotoxin conjugated iron oxide nanoparticles for glioblastoma therapy

Qingxin Mu, Guanyou Lin, Victoria K. Patton, Kui Wang, Oliver W. Press and Miqin Zhang*

Nanoparticles bearing gemcitabine and chlorotoxin show efficient cancer cell uptake and killing, extended blood half-life, and blood–brain barrier penetration.



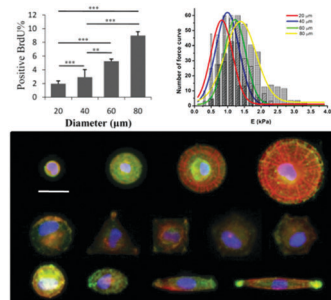
PAPERS

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Regulating the stemness of mesenchymal stem cells by tuning micropattern features

Xinlong Wang, Tomoko Nakamoto, Ida Dulińska-Molak, Naoki Kawazoe and Guoping Chen*

The stemness of MSCs was significantly influenced by cell morphogenesis regulated by micropatterns, and was always accompanied with change of nuclear activity and cytoskeleton mediated nanomechanics.

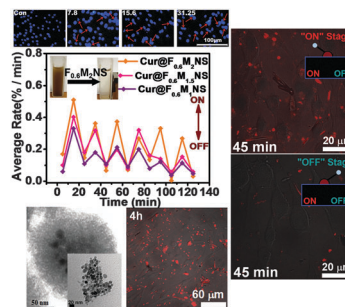


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Novel drug delivery nanosystems based on out-inside bifunctionalized mesoporous silica yolk–shell magnetic nanostars used as nanocarriers for curcumin

Peilin Huang, Baozhen Zeng, Zhuoxian Mai, Juntao Deng, Yueping Fang, Wenhua Huang,* Hongwu Zhang,* Jinying Yuan, Yen Wei and Wuyi Zhou*

Bifunctionalized yolk–shell magnetic mesoporous silica is used as a curcumin nanocarrier with magnetic response and increased cellular uptake.

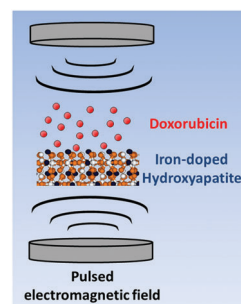


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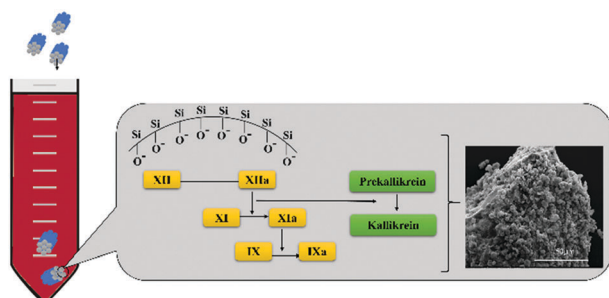
Superparamagnetic iron-doped nanocrystalline apatite as a delivery system for doxorubicin

Michele Iafisco,* Christophe Drouet,* Alessio Adamiano, Patricia Pascaud, Monica Montesi, Silvia Panseri, Stephanie Sarda and Anna Tampieri

Iron-doped superparamagnetic apatite nanoparticles are promising materials for magnetic drug delivery systems due to their ability to strongly bind the anticancer doxorubicin and provide an active control over the drug release by using a low-frequency pulsed electromagnetic field.



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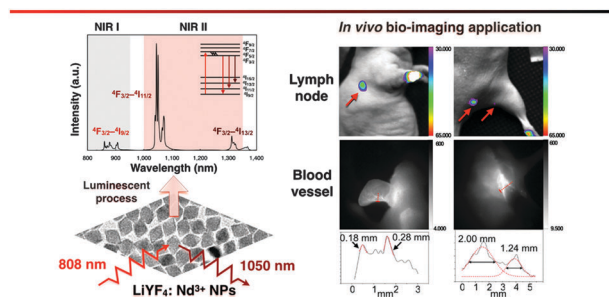


Gallium-containing mesoporous bioactive glass with potent hemostatic activity and antibacterial efficacy

Sara Pourshahrestani, Ehsan Zeimaran, Nahrizul Adib Kadri, Nicola Gargiulo, Shani Samuel, Sangeetha Vasudevaraj Naveen, Tunku Kamarul and Mark R. Towler*

Gallium-containing mesoporous bioactive glass can be considered as an efficient hemostatic material due to its merits of increased platelet adhesion and thrombin formation as well as antibacterial properties.

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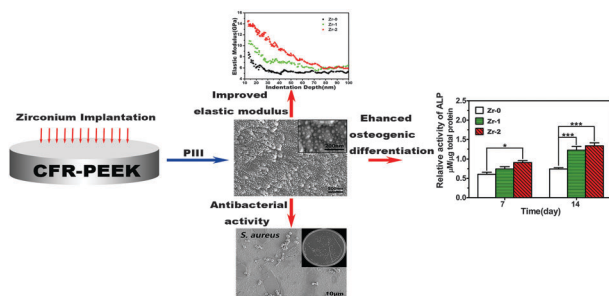


Nd³⁺-doped LiYF₄ nanocrystals for bio-imaging in the second near-infrared window

Xinyi Jiang, Cong Cao, Wei Feng* and Fuyou Li*

In vivo bioimaging of high spatial resolution based on LiYF₄:Nd in the second near-infrared window.

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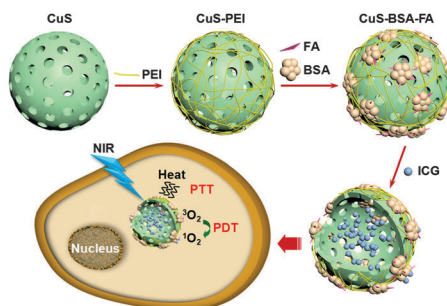


rBMSC and bacterial responses to isoelastic carbon fiber-reinforced poly(ether-ether-ketone) modified by zirconium implantation

Jian Li, Shi Qian, Congqin Ning and Xuanyong Liu*

PEEK-based biomaterials have great potential applications as hard tissue substitutes in bone tissue engineering.

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Protein-modified hollow copper sulfide nanoparticles carrying indocyanine green for photothermal and photodynamic therapy

Lu Han, Yang Zhang, Xu-Wei Chen, Yang Shu* and Jian-Hua Wang*

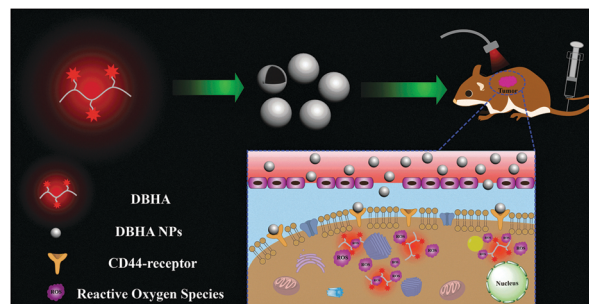
Protein-modified hollow copper sulfide nanoparticles carrying indocyanine green (ICG) facilitate combined therapeutic effects including photothermal therapy of CuS nanocarriers and cytotoxic effects of photodynamic and photothermal therapy by ICG.

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Tumor-targeting, enzyme-activated nanoparticles for simultaneous cancer diagnosis and photodynamic therapy

Huaxia Shi, Wucheng Sun, Changbing Liu, Guiying Gu, Bo Ma, Weili Si, Nina Fu, Qi Zhang,* Wei Huang* and Xiaochen Dong*

On-site activated diiodostyryl bodipy conjugated HA nanoparticles with specific targets synthesized via self-assembly were used for the suppression of tumor growth and exact tumor diagnosis with reduced side effects.

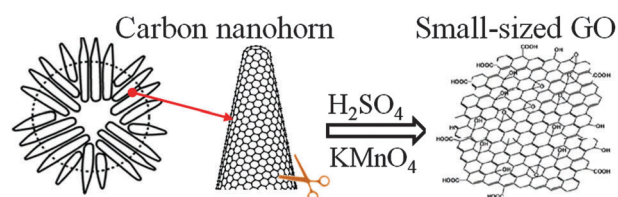


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Preparation of small-sized graphene oxide sheets and their biological applications

Minfang Zhang,* Toshiya Okazaki, Yoko Iizumi, Eijiro Miyako, Ryota Yuge, Shunji Bandow, Sumio Iijima and Masako Yudasaka

Small-sized graphene oxide (S-GO) sheets with lengths of 20–50 nm and widths of 2–10 nm are prepared from carbon nanohorns. Because of their appropriate sizes, abundant carboxylic groups, and strong fluorescence, the S-GO sheets may be superior choices for biomedical and diagnostic applications.

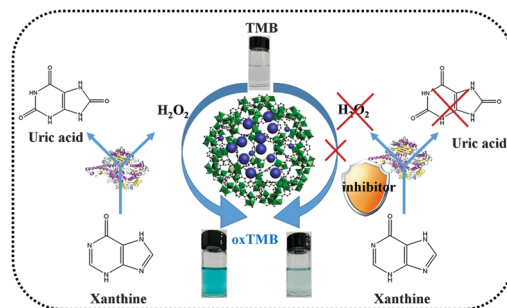


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Prussian blue nanoparticles encapsulated inside a metal–organic framework *via in situ* growth as promising peroxidase mimetics for enzyme inhibitor screening

Linjing Su, Yuhao Xiong, Haiguan Yang, Peng Zhang and Fanggui Ye*

Metal–organic framework-based peroxidase mimetics for enzyme-inhibitor screening.

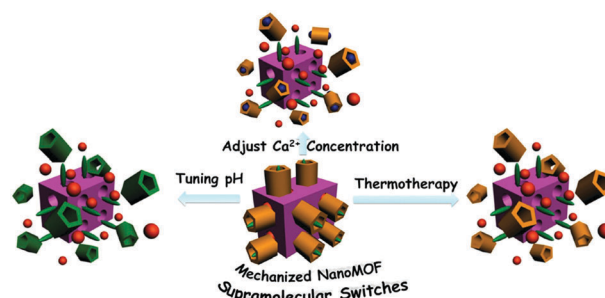


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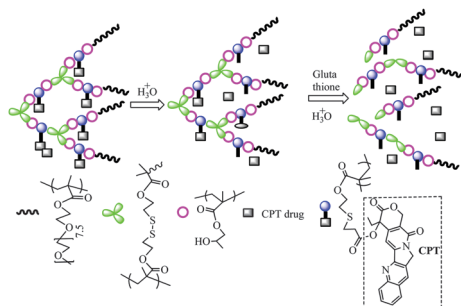
Ca²⁺, pH and thermo triple-responsive mechanized Zr-based MOFs for on-command drug release in bone diseases

Li-Li Tan, Nan Song, Sean Xiao-An Zhang, Haiwei Li, Bo Wang and Ying-Wei Yang*

A new design opens up the possibility of developing smart biomaterials for bone cancer (lowered pH and hypercalcemia) therapy.



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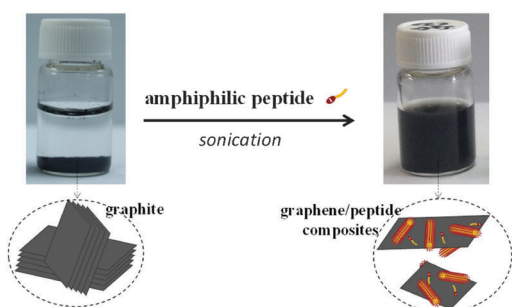


Unimolecular micelles of camptothecin-bonded hyperbranched star copolymers via β -thiopropionate linkage: synthesis and drug delivery

Liang Qiu, Qing Liu, Chun-Yan Hong* and Cai-Yuan Pan*

The pH- and redox-sensitive camptothecin-loaded unimolecular micelles display low cytotoxicity and controlled drug release in a sustained manner.

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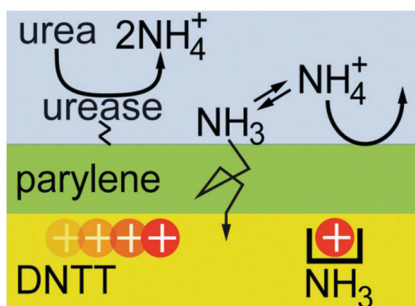


Direct exfoliation of graphite into graphene in aqueous solutions of amphiphilic peptides

Meiwen Cao, Ningning Wang, Lei Wang, Yu Zhang, Yucan Chen, Zilong Xie, Zongyi Li, Elias Pambou, Ruiheng Li, Cuixia Chen, Fang Pan, Hai Xu,* Jeffery Penny, John R. P. Webster and Jian R. Lu*

Peptide-mediated solution phase graphene exfoliation.

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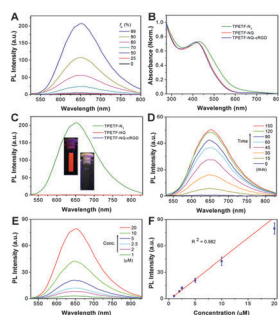


Ammonia sensing for enzymatic urea detection using organic field effect transistors and a semipermeable membrane

F. X. Werkmeister, T. Koide and B. A. Nickel*

Organic transistors detect the enzymatic breakdown of urea via ammonia diffusion into the transistor through a semipermeable parylene-C membrane.

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Dual-targeted activatable photosensitizers with aggregation-induced emission (AIE) characteristics for image-guided photodynamic cancer cell ablation

Youyong Yuan, Shidang Xu, Chong-Jing Zhang, Ruoyu Zhang and Bin Liu*

The currently available photosensitizers (PSs) for photodynamic therapy (PDT) can easily lead to undesirable normal cell death due to their intrinsic photo-toxicity and lack of selectivity for cancer cells.