Journal of Materials Chemistry B

Materials for biology and medicine

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IN THIS ISSUE

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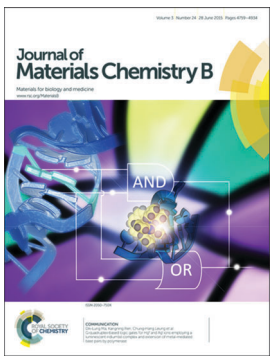

Cover
See Dik-Lung Ma, Kangning Ren, Chung-Hang Leung *et al.*, pp. 4780–4785.
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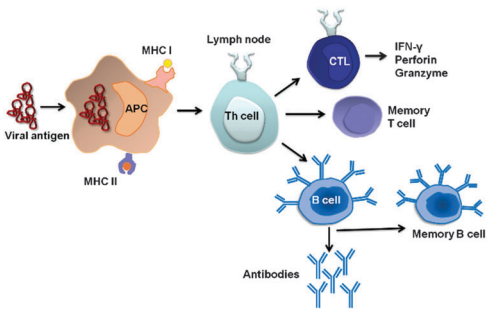
REVIEW

4767

The potential of nanoparticles for the immunization against viral infections

Viktoriya Sokolova, Astrid Maria Westendorf, Jan Buer, Klaus Überla and Matthias Epple*

Vaccination has a great impact on the prevention and control of infectious diseases. Nanoparticles can deliver immunoactive biomolecules to induce a virus-specific immune response.



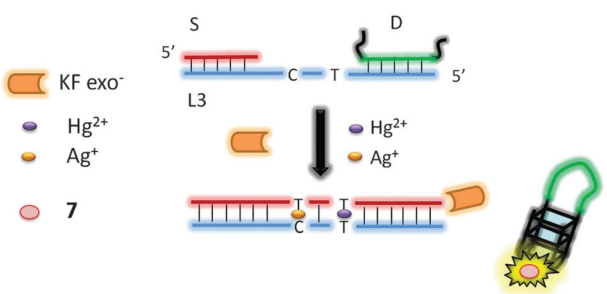
COMMUNICATIONS

4780

G-quadruplex-based logic gates for Hg^{II} and Ag^{I} ions employing a luminescent iridium(III) complex and extension of metal-mediated base pairs by polymerase

Dik-Lung Ma,* Sheng Lin, Lihua Lu, Modi Wang, Chong Hu, Li-Juan Liu, Kangning Ren* and Chung-Hang Leung*

We report herein the synthesis of a series of cyclometallated iridium(III) complexes as luminescent G-quadruplex-selective probes to construct AND, OR and INHIBIT logic gates for the detection of Hg^{II} and Ag^{I} ions.



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Journal of Materials Chemistry B

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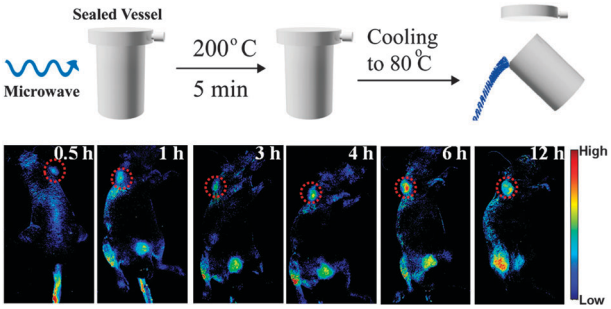
COMMUNICATIONS

4786

Rapid microwave-assisted synthesis of ultra-bright fluorescent carbon dots for live cell staining, cell-specific targeting and *in vivo* imaging

Hua He,* Xiaojuan Wang, Zhenzhen Feng, Tiantian Cheng, Xing Sun, Yawei Sun, Yongqing Xia, Shengjie Wang, Junying Wang and Xiaodong Zhang*

Ultra-bright fluorescent carbon dots were rapidly synthesized for multifunctional bio-imaging including live cell staining, cell-specific targeting and *in vivo* imaging.



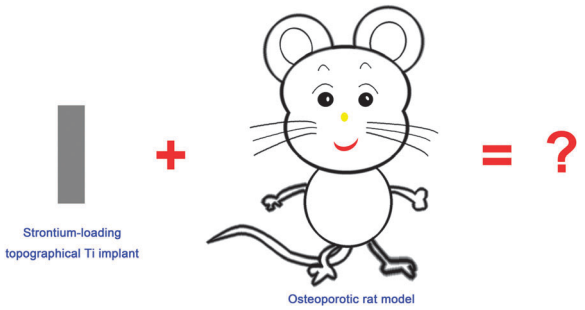
PAPERS

4790

Strontium delivery on topographical titanium to enhance bioactivity and osseointegration in osteoporotic rats

Jin Wen, Jinhua Li, Hongya Pan, Wenjie Zhang, Deliang Zeng, Lianyi Xu, Qianju Wu, Xiuli Zhang, Xuanyong Liu* and Xinquan Jiang*

Strontium-substituted hierarchical Ti surface can enhance the osseointegration by both increasing new bone formation and reducing bone resorption under osteoporotic conditions.

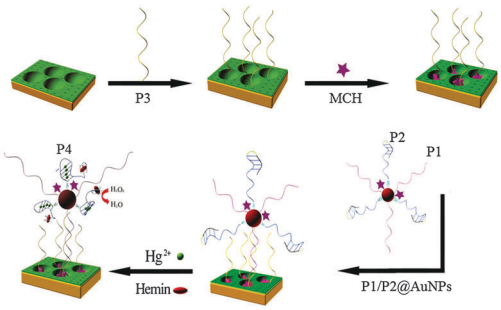


4805

An electrochemical sensing strategy based on a three dimensional ordered macroporous polyaniline–platinum platform and a mercury(II) ion-mediated DNAzyme functionalized nanolabel

Rong Tian, Xiaojun Chen,* Nan Jiang, Ning Hao, Lin Xu and Cheng Yao*

An Hg^{2+}-switched DNA biosensor using a three dimensional ordered macroporous polyaniline–platinum platform and a G-rich sequence recognition probe was developed, with the detection limit of 8.7×10^{-14} M.

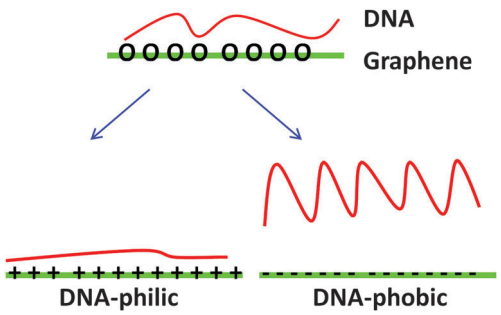


4814

Charge-tunable absorption behavior of DNA on graphene

Zhe Kong, Wei Zheng, Qi Wang, Hongbo Wang, Fengna Xi, Lijun Liang* and Jia-Wei Shen*

Charge-tunable absorption behavior of DNA on graphene: 0 is uncharged; − is negative charge; + is positive charge.



PAPERS

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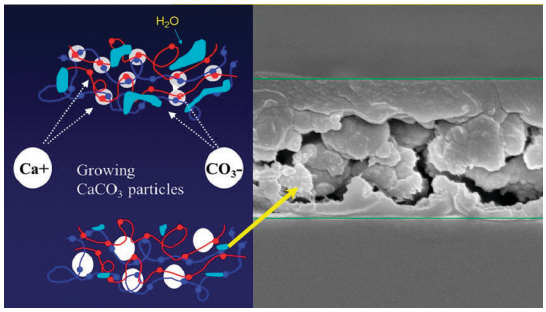
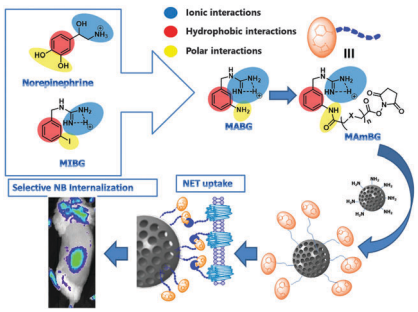


Naturally inspired polyelectrolyte multilayer composite films synthesised through layer-by-layer assembly and chemically infiltrated with $CaCO_3$

Iffat F. Patel, Maxim V. Kiryukhin, Nikolai L. Yakovlev, Himadri S. Gupta* and Gleb B. Sukhorukov*

Inorganic chemical infiltration in polyelectrolyte multilayer films results in a considerable change in morphology and mechanical properties mimicking natural composite materials.

4831

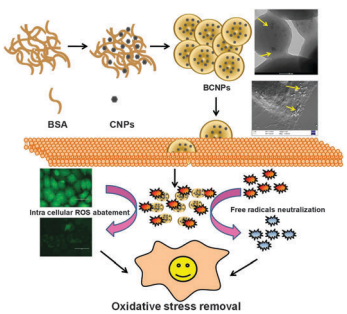


A new targeting agent for the selective drug delivery of nanocarriers for treating neuroblastoma

Gonzalo Villaverde, Alejandro Baeza,* Gustavo J. Melen, Arantzazu Alfranca, Manuel Ramirez and Maria Vallet-Regí*

Novel MIBG analogues as targeting agents for neuroblastoma nanomedicines.

4843

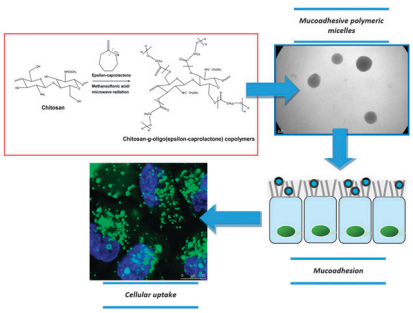


Antioxidant nanozyme: a facile synthesis and evaluation of the reactive oxygen species scavenging potential of nanoceria encapsulated albumin nanoparticles

Bharat Bhushan and P. Gopinath*

In the present article, a facile synthesis of biocompatible nanoceria encapsulated albumin nanoparticles (BCNPs) *via* desolvation technique that lead to the abatement of intracellular ROS is reported.

4853



Chitosan-*g*-oligo(epsilon-caprolactone) polymeric micelles: microwave-assisted synthesis and physicochemical and cytocompatibility characterization

Romina J. Glisoni, Silvina S. Quintana L, María Molina, Marcelo Calderón, Albertina G. Moglioni and Alejandro Sosnik*

Mucoadhesive chitosan-*g*-oligo(epsilon-caprolactone) polymeric micelles were synthesized by a microwave-assisted technique and fully characterized *in vitro*.

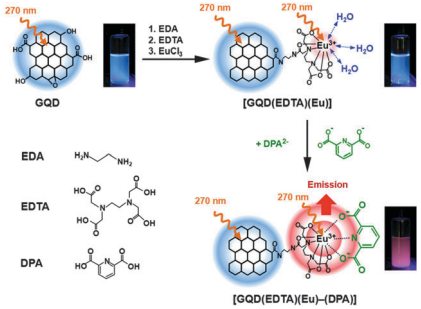
PAPERS

4865

A graphene quantum dots based fluorescent sensor for *anthrax* biomarker detection and its size dependence

Jaehoon Ryu, Eunwoo Lee, Kisu Lee and Jyongsik Jang*

Graphene quantum dots (GQDs) with two different diameters were modified *via* hybridization with a EuIII–macromolecule complex, and their application as dual emission fluorescent sensors for detection of *Bacillus anthracis* spores was investigated.

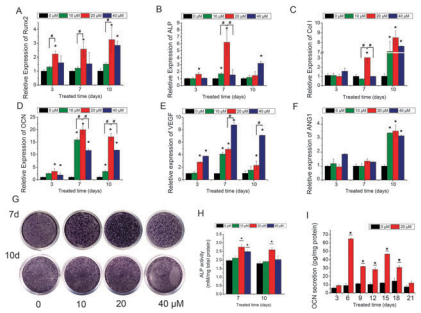


4871

Evaluation of osteogenesis and angiogenesis of icariin loaded on micro/nano hybrid structured hydroxyapatite granules as a local drug delivery system for femoral defect repair

Yuqiong Wu, Lunguo Xia, Yuning Zhou, Wudi Ma, Na Zhang, Jiang Chang, Kaili Lin,* Yuanjin Xu* and Xinquan Jiang*

Icariin has been identified to promote osteogenic differentiation of bone mesenchymal stem cells (BMSCs).

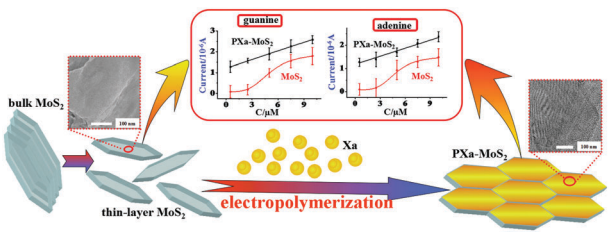


4884

Enhanced electropolymerization of poly(xanthurenic acid)–MoS_2 film for specific electrocatalytic detection of guanine and adenine

Tao Yang,* Meijing Chen, Fuxin Nan, Lihua Chen, Xiliang Luo* and Kui Jiao

The electropolymerized PXa–MoS_2 hybrid interface based on thin-layer MoS_2 exhibited enhanced electrocatalytic activity for aromatic guanine and adenine.

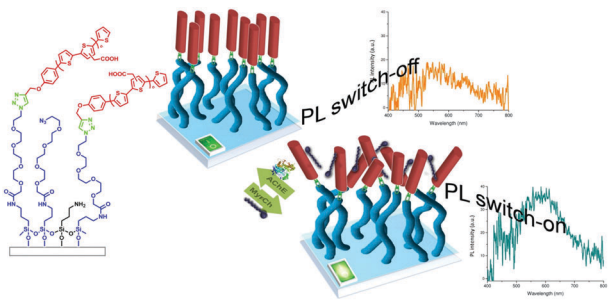


4892

Acetylcholinesterase-induced fluorescence turn-off of an oligothiophene-grafted quartz surface sensitive to myristoylcholine

G. Grisci, W. Mróz, U. Giovanella, K. Pagano, W. Porzio, L. Ragona,* F. Samperi, S. Tomaselli, F. Galeotti* and S. Destri

Immobilized oligothiophene chains that are able to assemble/disassemble upon interaction with a cationic surfactant to detect acetylcholinesterase activity by altering their photoluminescence.



PAPERS

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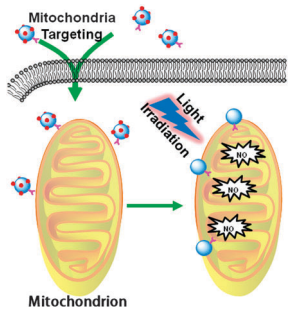
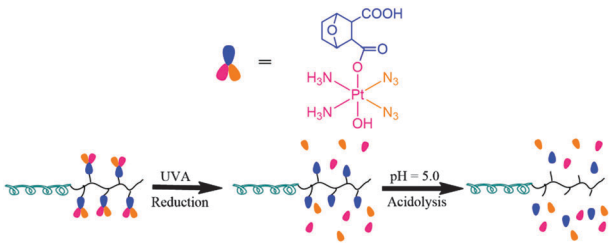


A mitochondrial-targeting and NO-based anticancer nanosystem with enhanced photo-controllability and low dark-toxicity

Jiangsheng Xu, Fang Zeng,* Hao Wu and Shuizhu Wu*

A spatiotemporally controllable NO-releasing nanosystem for killing cancer cells with high efficiency based on carbon dots has been developed, which exhibits mitochondrial targeting, light-responsive NO-releasing and cell imaging capabilities.

4913

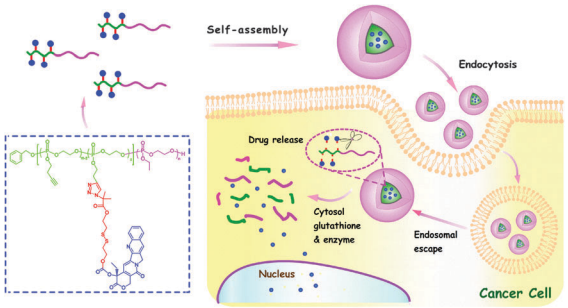


A polymer–(multifunctional single-drug) conjugate for combination therapy

Dongfang Zhou, Shasha He, Yuwei Cong, Zhigang Xie, Xuesi Chen, Xiabin Jing and Yubin Huang*

A single-drug integrating three different drug functions (platinum, azidyl radical and DMC) and two types of therapies (chemotherapy and radiation therapy) was synthesized and attached onto a carrier to prepare a polymer–(multifunctional single-drug) conjugate.

4922



A polyphosphoester-conjugated camptothecin prodrug with disulfide linkage for potent reduction-triggered drug delivery

Qingqing Zhang, Jinlin He,* Mingzu Zhang and Peihong Ni*

A reduction-cleavable polyphosphoester-camptothecin (CPT) prodrug tailored for enhancing drug loading content and triggering drug release has been prepared and applied in tumor chemotherapy.