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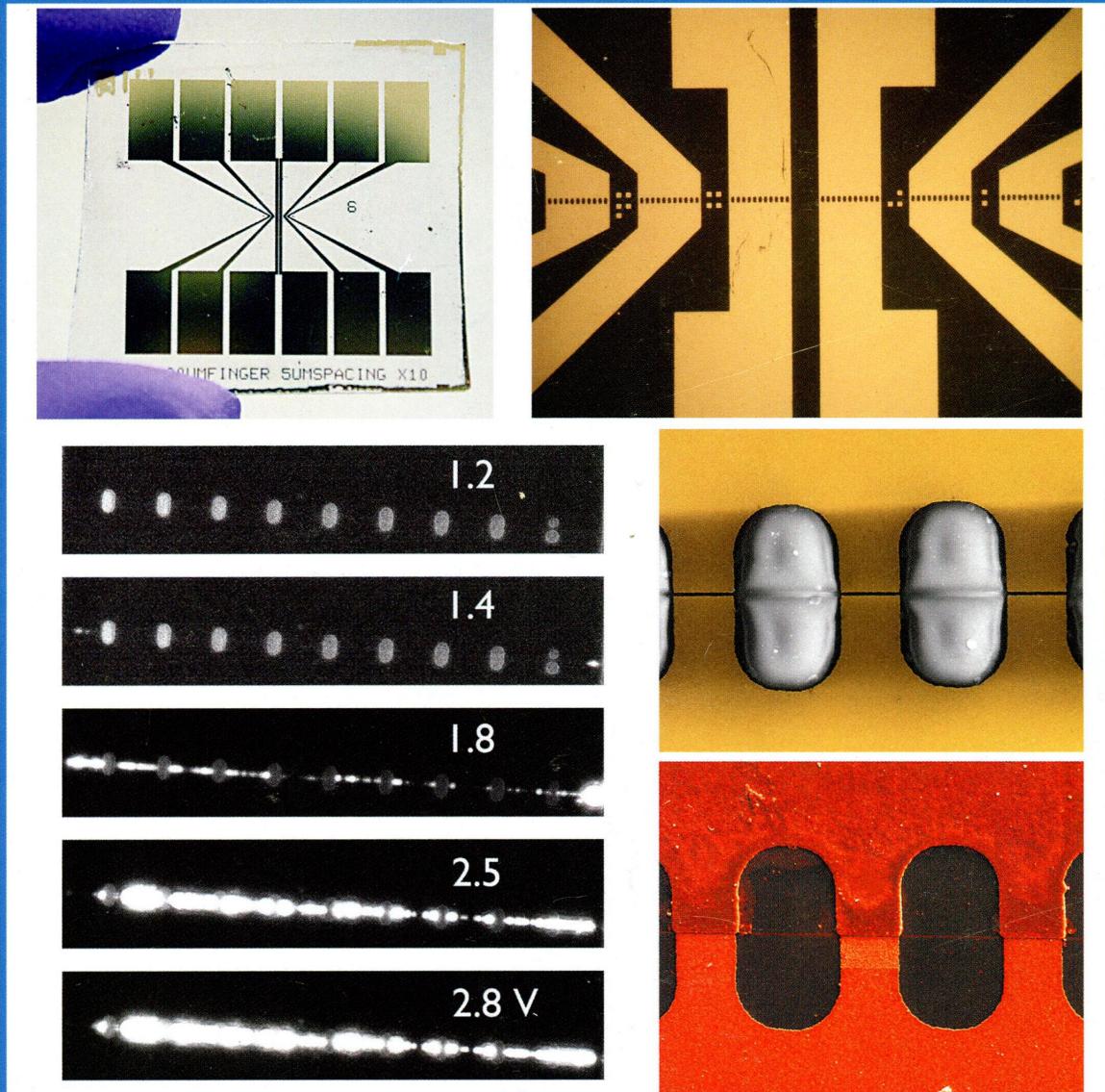
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# THE JOURNAL OF PHYSICAL CHEMISTRY C

Electrodeposited  
Polycrystalline CdSe  
Nanowires and  
Nanogap Devices  
Detect and  
Generate Light  
(see page 17179)



ENERGY CONVERSION AND STORAGE, OPTICAL AND ELECTRONIC DEVICES,  
INTERFACES, NANOMATERIALS, AND HARD MATTER



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**ON THE COVER:** Electrodeposited polycrystalline CdSe nanowires and nanogap devices detect and generate light. Light-emitting nanogap arrays filled with electrodeposited CdSe (clockwise from upper left): Photograph of a glass chip on which 6 linear arrays of 12 gold nanogaps are patterned; optical micrograph of these linear nanogap arrays; scanning electron micrograph (SEM) (false color) of three gold nanogaps prepared by focused ion beam milling; SEM image (false color) of the same structure after the electrodeposition of CdSe (red); and 5 optical micrographs showing band-gap electroluminescence from 10 CdSe-filled gold nanogaps as a function of the applied voltage as indicated. Reference: Xing et al. *Chem. Mater.* 2013, 25, 623–663. DOI: 10.1021/cm304001f. See page 17179.

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Reginald M. Penner\*

[dx.doi.org/10.1021/jp5037074](http://dx.doi.org/10.1021/jp5037074)

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[dx.doi.org/10.1021/jp503670a](http://dx.doi.org/10.1021/jp503670a)

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[dx.doi.org/10.1021/jp4109943](http://dx.doi.org/10.1021/jp4109943)

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[dx.doi.org/10.1021/jp500798c](http://dx.doi.org/10.1021/jp500798c)

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**Vulcanized Ethene-PMO: A New Strategy to Create Ultrastable Support Materials and Adsorbents**

Maria I. López, Dolores Esquivel, César Jiménez-Sanchidrián, Pascal Van Der Voort, and Francisco J. Romero-Salguero\*

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**Structural Organization and Supramolecular Interactions of the Task-Specific Ionic Liquid 1-Methyl-3-carboxymethylimidazolium Chloride: Solid, Solution, and Gas Phase Structures**  
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**Manganese Phthalocyanine Derivatives Synthesized by On-Surface Cyclotetramerization**

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**Effect of Annealing Environment on Low-Temperature Magnetic and Dielectric Properties of EuCo<sub>0.5</sub>Mn<sub>0.5</sub>O<sub>3</sub>**  
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**SERS Correlation Spectroscopy of Silver Aggregates in Colloidal Suspension: Quantitative Sizing Down to a Single Nanoparticle**

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**Structure and Hindered Vibration of Bi<sup>2+</sup> in the Red-Orange Phosphor SrB<sub>4</sub>O<sub>7</sub>:Bi**  
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**Wide-Band Excited  $\text{YTiTaO}_6$ :  $\text{Eu}^{3+}/\text{Er}^{3+}$  Phosphors: Structure Refinement, Luminescence Properties, and Energy Transfer Mechanisms**

Yang Zhang, Dongling Geng, Xuejiao Li, Jian Fan, Kai Li, Hongzhou Lian, Mengmeng Shang,\* and Jun Lin\*

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**Upconversion Emission Enhancement of  $\text{NaYF}_4:\text{Yb},\text{Er}$  Nanoparticles by Coupling Silver Nanoparticle Plasmons and Photonic Crystal Effects**

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**X-ray Spectroscopic Study of the Electronic Structure of Monazite- and Xenotime-Type Rare-Earth Phosphates**

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**Aggregation of Cyanine Dye Molecules in the Near Fields of Plasmonic Nanoparticles Excited by Pulsed Laser Irradiation**

Nikita A. Toropov, Peter S. Parfenov, and Tigran A. Vartanyan\*

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**Enhanced Photorefractive and Third-Order Nonlinear Optical Properties of 5CB-Based Polymer-Dispersed Liquid Crystals by Graphene Doping**

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**NMR as a Probe of Band Inversion in Topologically Nontrivial Half-Heusler Compounds**

Bogdan Nowak and Dariusz Kaczorowski\*

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[dx.doi.org/10.1021/jp505364d](https://doi.org/10.1021/jp505364d)**Study of the C<sub>60</sub>/Ag Interface of a Large Area Nanoarchitected Ag Substrate Using Surface-Enhanced Raman Scattering**  
Akram A. Khosroabadi, Dallas L. Matz, Palash Gangopadhyay,\* Jeanne E. Pemberton, and Robert A. Norwood\*18035 [dx.doi.org/10.1021/jp505524g](https://doi.org/10.1021/jp505524g)**New Single-Phase, White-Light-Emitting Phosphors Based on  $\delta$ -Gd<sub>2</sub>Si<sub>2</sub>O<sub>7</sub> for Solid-State Lighting**

Alberto José Fernández-Carrión, Manuel Ocaña, Jorge García-Sevillano, Eugenio Cantelar, and Ana Isabel Becerro\*

## Physical Processes in Nanomaterials and Nanostructures

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[dx.doi.org/10.1021/jp501796p](https://doi.org/10.1021/jp501796p)**Diffusive Equilibrium Properties of O<sub>2</sub> in Amorphous SiO<sub>2</sub> Nanoparticles Probed via Dependence of Concentration on Size and Pressure**

G. Iovino, S. Agnello,\* F. M. Gelardi, and R. Boscaino

18051 [dx.doi.org/10.1021/jp500051j](https://doi.org/10.1021/jp500051j)**Structure of  $\delta$ -Alumina: Toward the Atomic Level Understanding of Transition Alumina Phases**

Libor Kovárik,\* Mark Bowden, Arda Genc, János Szanyi, Charles H. F. Peden, and Ja Hun Kwak\*

18059 [dx.doi.org/10.1021/jp500105f](https://doi.org/10.1021/jp500105f)**Photocurrent Quantum Yield of Semiconducting Carbon Nanotubes: Dependence on Excitation Energy and Exciton Binding Energy**

Said Kazaoui,\* Steffan Cook, Nicolas Izard, Yoichi Murakami, Shigeo Maruyama, and Nobutsugu Minami

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[dx.doi.org/10.1021/jp501387c](https://doi.org/10.1021/jp501387c)**Antiferromagnetism in Nanofilms of Mn-Doped GaN**

C. Echeverría-Arrondo, J. Pérez-Conde, and A. Ayuela\*

18069 [dx.doi.org/10.1021/jp501559x](https://doi.org/10.1021/jp501559x)**Coating Mechanisms of Single-Walled Carbon Nanotube by Linear Polyether Surfactants: Insights from Computer Simulations**

Edita Sarukhanyan, Giuseppe Milano, and Danilo Roccatano\*

18079 [dx.doi.org/10.1021/jp502033d](https://doi.org/10.1021/jp502033d)**Energy Transfer between Quantum Dots and Conjugated Dye Molecules**

Gary Beane, Klaus Boldt, Nicholas Kirkwood, and Paul Mulvaney\*

18087 [dx.doi.org/10.1021/jp502825p](https://doi.org/10.1021/jp502825p)**Multifunctional Hybrid Nanomaterials from Water Dispersible CaF<sub>2</sub>:Eu<sup>3+</sup>, Mn<sup>2+</sup> and Fe<sub>3</sub>O<sub>4</sub> for Luminescence and Hyperthermia Application**

Laishram Priyobarta Singh, Sri Krishna Srivastava,\* Ratikant Mishra, and Raghunani Singh Ningthoujam\*

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[dx.doi.org/10.1021/jp503059e](https://doi.org/10.1021/jp503059e)**Defect Chemistry of the Metal Cation Defects in the p- and n-Doped SnO<sub>2</sub> Nanocrystalline Films**

Guozhu Zhang, Changsheng Xie,\* Shuping Zhang, Shasha Zhang, and Ya Xiong

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[dx.doi.org/10.1021/jp503203b](https://doi.org/10.1021/jp503203b)**Controllable Fabrication of Pyramidal Silicon Nanopore Arrays and Nanoslits for Nanostencil Lithography**

Tao Deng, Mengwei Li, Jian Chen, Yifan Wang, and Zewen Liu\*

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[dx.doi.org/10.1021/jp503242e](https://doi.org/10.1021/jp503242e)**DNA-Based Platinum Nanozymes for Peroxidase Mimetics**

Yan Fu, Xuyin Zhao, Jinli Zhang, and Wei Li\*

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[dx.doi.org/10.1021/jp503426a](https://doi.org/10.1021/jp503426a)**Modification of Photon Emission Statistics from Single Colloidal CdSe Quantum Dots by Conductive Materials**

Hui-Wen Cheng, Chi-Tsu Yuan,\* Jyh-Shyang Wang, Tzu-Neng Lin, Ji-Lin Shen, Yu-Ju Hung, Jau Tang, and Fan-Gang Tseng\*

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[dx.doi.org/10.1021/jp5039943](https://doi.org/10.1021/jp5039943)**Structural, Magnetic, Electronic, Defect, and Diffusion Properties of Cr<sub>2</sub>O<sub>3</sub>: A DFT+U Study**

François Lebreau, Mazharul M. Islam, Boubakar Diawara,\* and Philippe Marcus

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[dx.doi.org/10.1021/jp504114f](https://doi.org/10.1021/jp504114f)**Discontinuous pn-Heterojunction for Organic Thin Film Transistors**

Boeun Cho, Seong Hun Yu, Minwoo Kim, Moo Hyung Lee, Wansoo Huh, Jiyoul Lee, Jungwook Kim, Jeong Ho Cho, Jun Young Lee, Young Jae Song,\* and Moon Sung Kang\*

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[dx.doi.org/10.1021/jp504169t](https://doi.org/10.1021/jp504169t)**Electronic-Transport Properties of Single-Walled Zigzag SiGe Nanotubes**

Pabitra Narayan Samanta and Kalyan Kumar Das\*

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[dx.doi.org/10.1021/jp5045223](https://doi.org/10.1021/jp5045223)**Microstructure and Cs Behavior of Ba-Doped Aluminosilicate Pollicite Irradiated with F<sup>-</sup> Ions**

Weilin Jiang,\* Libor Kovarik, Zihua Zhu, Tamas Varga, Mark H. Engelhard, Mark E. Bowden, Tina M. Nenoff, and Terry J. Garino

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[dx.doi.org/10.1021/jp504736u](https://doi.org/10.1021/jp504736u)**Integral Method Analysis of Electroabsorption Spectra and Its Application to Quantum Dots of PbSe**

Kamlesh Awasthi, Toshifumi Iimori, and Nobuhiro Ohta\*

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[dx.doi.org/10.1021/jp504745x](https://doi.org/10.1021/jp504745x)**Size-Dependent Phase Behavior of the Hexadecane–Octadecane System Confined in Nanoporous Glass**

Li Ping Wang, Qi Feng Li, Chao Wang, and Xiao Zheng Lan\*

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[dx.doi.org/10.1021/jp5048216](https://doi.org/10.1021/jp5048216)**Effect of Capping Agent and Medium on Light-Induced Variation of the Luminescence Properties of CdTe Quantum Dots: A Study Based on Fluorescence Correlation Spectroscopy, Steady State and Time-Resolved Fluorescence Techniques**

Satyajit Patra and Anunay Samanta\*

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[dx.doi.org/10.1021/jp504870n](https://doi.org/10.1021/jp504870n)**Kinetic Trapping of D<sub>2</sub> in MIL-53(Al) Observed Using Neutron Scattering**

Rachel A. Pollock, Jae-Hyuk Her, Craig M. Brown,\* Yun Liu, and Anne Dally

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[dx.doi.org/10.1021/jp505091t](https://doi.org/10.1021/jp505091t)**Density of Deep Trap States in Oriented TiO<sub>2</sub> Nanotube Arrays**

Qian Zhang, Verónica Celorio, Kieren Bradley, Flurin Eisner, David Cherns, Wei Yan, and David J. Fermín\*

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[dx.doi.org/10.1021/jp505121b](https://doi.org/10.1021/jp505121b)**Size Modulation of Colloidal Au Nanoparticles via Digestive Ripening in Conjunction with a Solvated Metal Atom Dispersion Method: An Insight Into Mechanism**

Srilakshmi P. Bhaskar, Megha Vijayan, and Balaji R. Jagirdar\*

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[dx.doi.org/10.1021/jp505162c](https://doi.org/10.1021/jp505162c)**Evidence for the Ligand-Assisted Energy Transfer from Trapped Exciton to Dopant in Mn-Doped CdS/ZnS Semiconductor Nanocrystals**

Sourav Maiti, Hsiang-Yun Chen, Yerok Park, and Dong Hee Son\*

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[dx.doi.org/10.1021/jp505464z](https://doi.org/10.1021/jp505464z)**Ultrafast Electronic Relaxation and Vibrational Cooling Dynamics of Au<sub>144</sub>(SC<sub>2</sub>H<sub>4</sub>Ph)<sub>60</sub> Nanocluster Probed by Transient Mid-IR Spectroscopy**

Satu Mustalahti, Pasi Myllyperkiö, Tanja Lahtinen, Kirsi Salorinne, Sami Malola, Jaakko Koivisto, Hannu Häkkinen, and Mika Pettersson\*

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[dx.doi.org/10.1021/jp505525k](https://doi.org/10.1021/jp505525k)**Spectroscopic Characterization of Carbon Nanotube-Polypyrrole Composites**

Fabiana Inoue, Rômulo A. Ando, Celly M. S. Izumi, and Paola Corio\*

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[dx.doi.org/10.1021/jp505593f](https://doi.org/10.1021/jp505593f)**Cyclic and Square-Wave Voltammetry at Diffusionally Asymmetric Microscopic and Nanoscopic Liquid–Liquid Interfaces: A Simple Theoretical Approach**

A. Molina,\* E. Laborda, and R. G. Compton\*

18257 dx.doi.org/10.1021/jp505705f

**Abnormal Absorption and Energy Flow of Electromagnetic Wave in Ultrathin Metal Films**

Hong-jie Xue, Reng-lai Wu, and Yabin Yu\*

18263 dx.doi.org/10.1021/jp505986c

**Electronic and Vibrational Structure of Complexes of Tetracyanoquinodimethane with Cadmium Chalcogenide Quantum Dots**

Laura C. Cass, Nathaniel K. Swenson, and Emily A. Weiss\*

18271 dx.doi.org/10.1021/jp5060759

**Engineering the Band Structure of Nanoparticles by an Incommensurate Cover Layer**

K. Schouteden,\* Z. Li, V. Iancu, D. A. Muzychko, E. Janssens, P. Lievens, and C. Van Haesendonck

18278 dx.doi.org/10.1021/jp5063836

**Rendering High Charge Density of States in Ionic Liquid-Gated MoS<sub>2</sub> Transistors**

Yeonsung Lee, Jiyoul Lee, Sunkook Kim,\* and Ho Seok Park\*

## Additions and Corrections

18283 dx.doi.org/10.1021/jp5067605

**Correction to "Molecular Dynamics Simulation Study of the Interfacial Structure and Differential Capacitance of Alkylimidazolium Bis(trifluoromethanesulfonyl)imide [C<sub>n</sub>mim][TFSI] Ionic Liquids at Graphite Electrodes"**

Jenel Vatamanu,\* Oleg Borodin, Dmitry Bedrov, and Grant D. Smith