



ON THE COVER: The artwork shows four medieval warriors, each armed with a weapon that symbolizes one of the novel properties of metal–organic frameworks (MOFs) enabled by sophisticated organic ligands, within a chamber that represents the crystallographic order of MOFs structures. Image designed by Shanna Zentner. For more information, see “Metal–Organic Frameworks: Rise of the Ligands” by Teng-Hao Chen, Ilya Popov, Watchareeya Kaveevivitchai, and Ognjen Š. Miljanić* (*Chem. Mater.* **2014**, *26*, 4322–4325).

Editorial

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The Latest from Our Up-and-Coming Series

Jillian M. Buriak

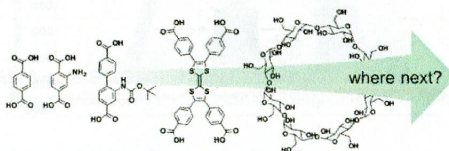
[dx.doi.org/10.1021/cm502671q](https://doi.org/10.1021/cm502671q)

Perspectives

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Metal–Organic Frameworks: Rise of the Ligands

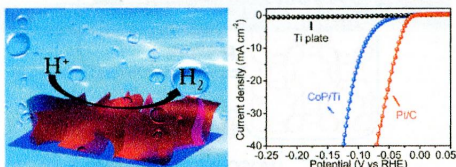
Teng-Hao Chen, Ilya Popov, Watchareeya Kaveevivitchai, and Ognjen Š. Miljanić*

[dx.doi.org/10.1021/cm501657d](https://doi.org/10.1021/cm501657d)


Communications

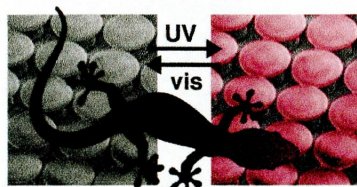
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CoP Nanosheet Arrays Supported on a Ti Plate: An Efficient Cathode for Electrochemical Hydrogen Evolution
 Zonghua Pu, Qian Liu, Ping Jiang, Abdullah M. Asiri, Abdullah Y. Obaid, and Xuping Sun*

[dx.doi.org/10.1021/cm501273s](https://doi.org/10.1021/cm501273s)


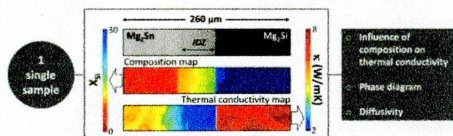
A Photoresponsive Biomimetic Dry Adhesive Based on Doped PDMS Microstructures

Pamela Tannouri, Khaled M. Arafeh, Jeffrey M. Krahn, Scott L. Beaupr , Carlo Menon,* and Neil R. Branda*



Combinatorial Approach Based on Interdiffusion Experiments for the Design of Thermoelectrics: Application to the $Mg_2(Si,Sn)$ Alloys

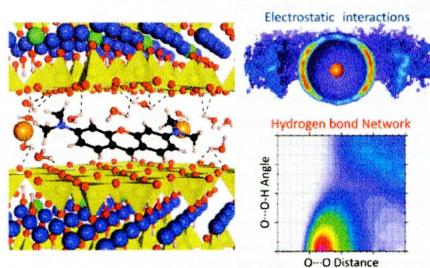
Solange Viv s, Philippe Bellanger, St phane Gorsse,* Changdong Wei, Qiaofu Zhang, and Ji-Cheng Zhao



Articles

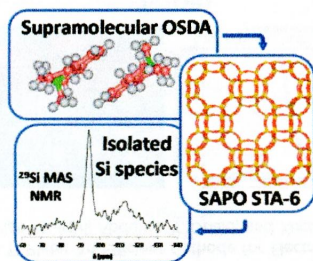
Molecular Forces Governing Shear and Tensile Failure in Clay-Dye Hybrid Materials

Eduardo Duque-Redondo, Hego Manzano,* Nerea Epelde-Elezcano, Virginia Mart nez-Mart nez, and I nigo L pez-Arbeloa



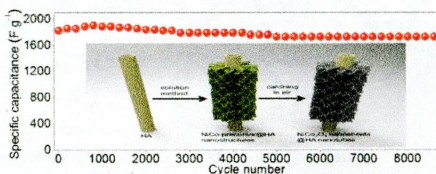
Synthesis of the Small Pore Silicoaluminophosphate STA-6 by Using Supramolecular Self-Assembled Organic Structure Directing Agents

Raquel Martínez-Franco, Ángel Cantín, Manuel Moliner,* and Avelino Corma*



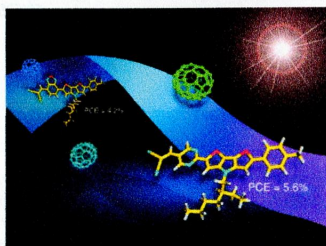
Hierarchical NiCo_2O_4 Nanosheets@halloysite Nanotubes with Ultrahigh Capacitance and Long Cycle Stability As Electrochemical Pseudocapacitor Materials

Jin Liang, Zhaoyang Fan, Sheng Chen, Shujiang Ding,* and Guang Yang*



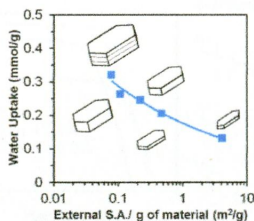
New Molecular Donors with Dithienopyrrole as the Electron-Donating Group for Efficient Small-Molecule Organic Solar Cells

Hung-I Lu, Chih-Wei Lu, Ying-Chi Lee, Hao-Wu Lin,* Li-Yen Lin, Francis Lin, Jung-Hung Chang, Chih-I Wu, and Ken-Tsung Wong*

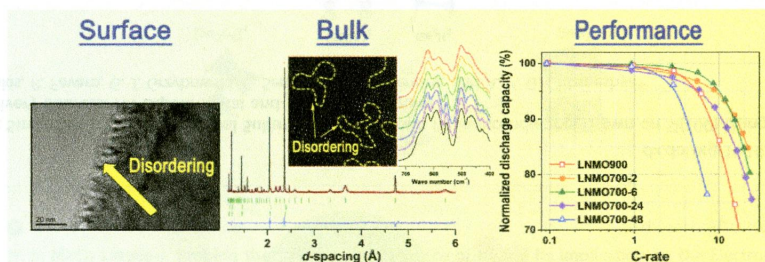


Effect of Crystal Size on Framework Defects and Water Uptake in Fluoride Mediated Silicalite-1

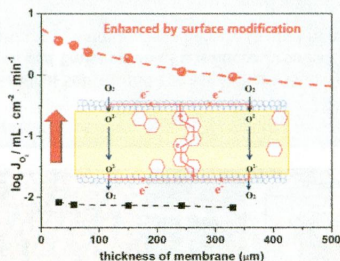
Michelle E. Dose, Ke Zhang, Joshua A. Thompson, Johannes Leisen, Ronald R. Chance, William J. Koros, Benjamin A. McCool, and Ryan P. Lively*

**Integrated Nano-Domains of Disordered and Ordered Spinel Phases in LiNi_{0.5}Mn_{1.5}O₄ for Li-Ion Batteries**

Jung-Hyun Kim,* Ashfia Huq, Miaofang Chi, Nicholas P.W. Pieczonka, Eunseok Lee, Craig A. Bridges, Misle M. Tessema, Arumugam Manthiram, Kristin A. Persson, and Bob R. Powell

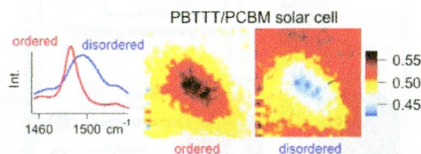
**Dramatically Enhanced Oxygen Fluxes in Fluorite-Rich Dual-Phase Membrane by Surface Modification**

Jong Hoon Joo,* Kyong Sik Yun, Younki Lee, Jaewon Jung, Chung-Yul Yoo, and Ji Haeng Yu*



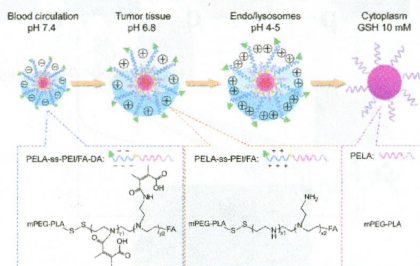
Spatially Resolving Ordered and Disordered Conformers and Photocurrent Generation in Intercalated Conjugated Polymer/Fullerene Blend Solar Cells

Jian Gao, Alan K. Thomas, Ryan Johnson, Hua Guo, and John K. Grey*



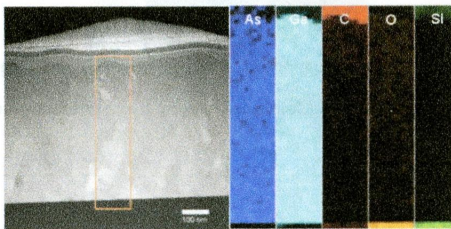
Dual-Responsive Polymer Micelles for Target-Cell-Specific Anticancer Drug Delivery

Xing Guo, Chunli Shi, Guang Yang, Jie Wang, Zhenghong Cai, and Shaobing Zhou*



Solution Processing of GaAs Thin Films for Photovoltaic Applications

Sanjayan Sathasivam, Ranga Rao Arnepalli, Bhaskar Kumar, Kaushal K. Singh, Robert J. Visser, Christopher S. Blackman, and Claire J. Carmalt*

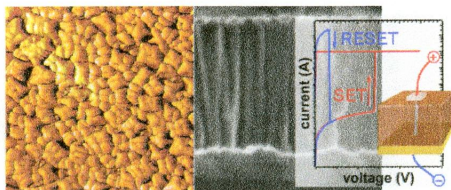


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dx.doi.org/10.1021/cm5014027

Electrochemical Synthesis and Nonvolatile Resistance Switching of Mn_3O_4 Thin Films

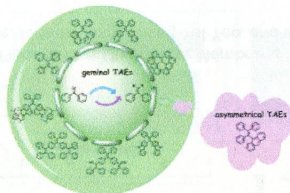
Jakub A. Koza, Ian P. Schroen, Matthew M. Willmering, and Jay A. Switzer*

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dx.doi.org/10.1021/cm501414b

General Synthetic Approach toward Geminal-Substituted Tetraarylethene Fluorophores with Tunable Emission Properties: X-ray Crystallography, Aggregation-Induced Emission and Piezofluorochromism

Guo-Feng Zhang, Hongfeng Wang, Matthew P. Aldred,* Tao Chen, Ze-Qiang Chen, Xianggao Meng,* and Ming-Qiang Zhu*



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dx.doi.org/10.1021/cm501434z

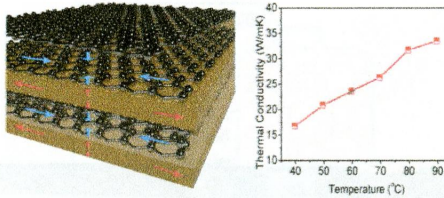
Molecular Strategies for Configurational Sulfur Doping of Group IV Semiconductors Grown on Si(100) Using $S(MH_3)_2$ ($M = Si, Ge$) Delivery Sources: An Experimental and Theoretical Inquiry

J. Kouvetakis, R. Favaro, G. J. Grzybowski, C. Senaratne, J. Menéndez, and A. V. G. Chizmeshya*



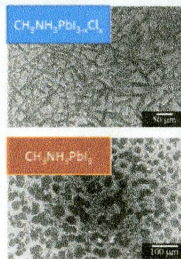
Ultrahigh Thermal Conductivity of Assembled Aligned Multilayer Graphene/Epoxy Composite

Qi Li, Yufen Guo, Weiwei Li, Shengqiang Qiu, Chao Zhu, Xiangfei Wei, Mingliang Chen, Chaojun Liu, Shutian Liao, Youpin Gong, Ananta Kumar Mishra, and Liwei Liu*



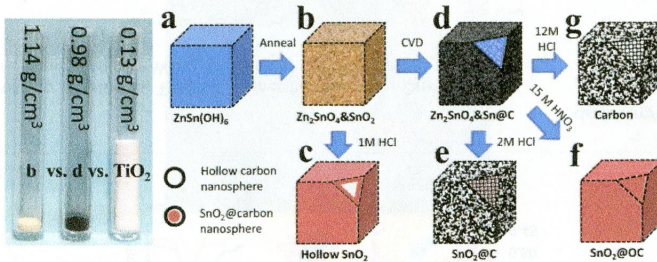
Enhanced Crystallinity in Organic–Inorganic Lead Halide Perovskites on Mesoporous TiO₂ via Disorder–Order Phase Transition

Byung-wook Park, Bertrand Philippe, Torbjörn Gustafsson, Kári Sveinbjörnsson, Anders Hagfeldt, Erik M. J. Johansson,* and Gerrit Boschloo*



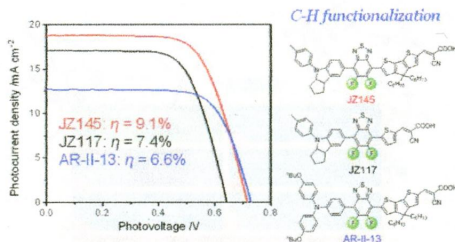
A Family of Mesocubes

Sai Karthik Addu, Jian Zhu, K. Y. Simon Ng, and Da Deng*



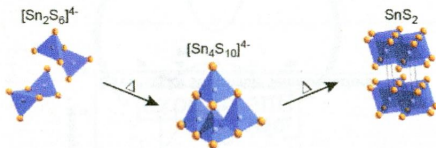
Effect of Molecular Structure Perturbations on the Performance of the D-A- π -A Dye Sensitized Solar Cells

Xiongwu Kang, Junxiang Zhang, Daniel O'Neil, Anthony J. Rojas, Wayne Chen, Paul Szymanski, Seth R. Marder,* and Mostafa A. El-Sayed*



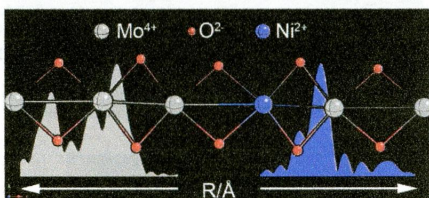
(NH₄)₄Sn₂S₆·3H₂O: Crystal Structure, Thermal Decomposition, and Precursor for Textured Thin Film

Peter Norby, Jacob Overgaard, Per S. Christensen, Bo Richter, Xin Song, Mingdong Dong, Anpan Han, Jørgen Skibsted, Bo B. Iversen,* and Simon Johnsen*



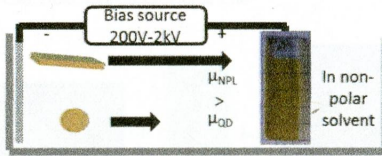
Allovalent Ni in MoO₂ Lattice— Probing the Structure and Valence of Ni and Its Implication on the Electrochemical Performance

Ofer Hirsch, Guobo Zeng, Li Luo, Malwina Staniuk, Paula M. Abdala, Wouter van Beek, Felix Rechberger, Martin J. Süess, Markus Niederberger, and Dorota Koziej*

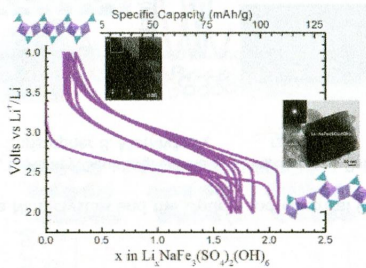


Selective Electrophoretic Deposition of CdSe Nanoplatelets

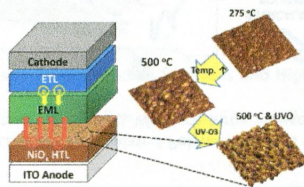
Emmanuel Lhuillier, Patrick Hease, Sandrine Ithurria, and Benoit Dubertret*

**Lithium Intercalation into the Jarosite-type Hydroxysulfate: A Topotactic Reversible Reaction from a Crystalline Phase to an Inorganic Polymer-like Structure**

M. Gnanavel, V. Pralong,* O. I. Lebedev, V. Caignaert, P. Bazin, and B. Raveau*

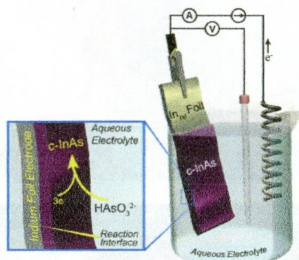
**Nickel Oxide Hole Injection/Transport Layers for Efficient Solution-Processed Organic Light-Emitting Diodes**

Shuyi Liu, Rui Liu, Ying Chen, Suzheng Ho, Jong H. Kim, and Franky So*



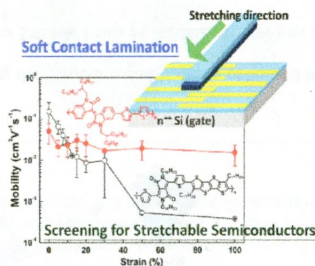
Electrochemically Gated Alloy Formation of Crystalline InAs Thin Films at Room Temperature in Aqueous Electrolytes

Eli Fahrenkrug, Junsu Gu, and Stephen Maldonado*



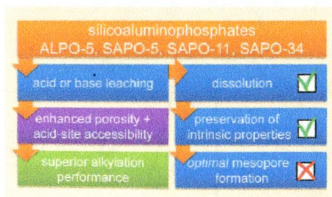
A Rapid and Facile Soft Contact Lamination Method: Evaluation of Polymer Semiconductors for Stretchable Transistors

Hung-Chin Wu, Stephanie J. Benight, Alex Chortos, Wen-Ya Lee, Jianguo Mei, John W. F. To, Chien Lu, Mingqian He, Jeffery B.-H. Tok, Wen-Chang Chen, and Zhenan Bao*



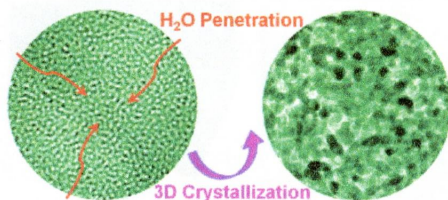
Hierarchical Silicoaluminophosphates by Postsynthetic Modification: Influence of Topology, Composition, and Silicon Distribution

Danny Verboekend,* Maria Milina, and Javier Pérez-Ramírez*

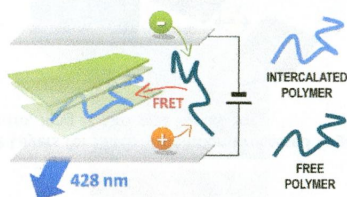


Understanding Solvothermal Crystallization of Mesoporous Anatase Beads by In Situ Synchrotron PXRD and SAXS

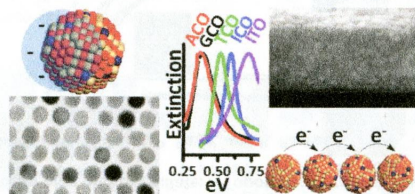
Fang Xia, Dehong Chen, Nicola V. Y. Scarlett, Ian C. Madsen, Deborah Lau, Matteo Leoni, Jan Ilavsky, Helen E. A. Brand, and Rachel A. Caruso*

**FRET-Assisted Deep-Blue Electroluminescence in Intercalated Polymer Hybrids**

Umberto Giovanella,* Giuseppe Leone, Francesco Galeotti, Wojciech Mróz, Francesco Meinardi, and Chiara Botta

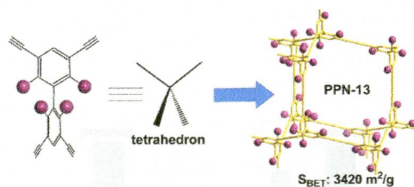
**Synthesis of N-Type Plasmonic Oxide Nanocrystals and the Optical and Electrical Characterization of their Transparent Conducting Films**

Benjamin T. Diroll, Thomas R. Gordon, E. Ashley Gaulding, Dahlia R. Klein, Taejong Paik, Hyeong Jin Yun, E.D. Goodwin, Divij Damodhar, Cherie R. Kagan, and Christopher B. Murray*

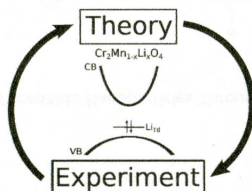


Rational Design and Synthesis of Porous Polymer Networks: Toward High Surface Area

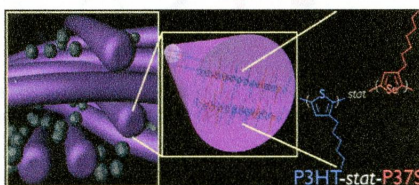
Weigang Lu, Zhangwen Wei, Daqiang Yuan,* Jian Tian, Stephen Fordham, and Hong-Cai Zhou*

**Experimental Characterization of a Theoretically Designed Candidate p-Type Transparent Conducting Oxide: Li-Doped Cr_2MnO_4**

Arpun R. Nagaraja, Kevin H. Stone, Michael F. Toney, Haowei Peng, Stephan Lany, and Thomas O. Mason*

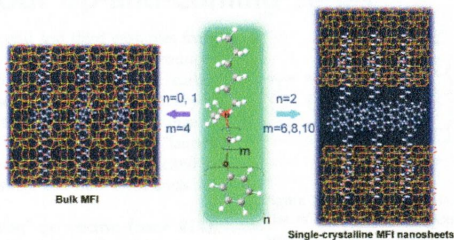
**Doping Poly(3-hexylthiophene) Nanowires with Selenophene Increases the Performance of Polymer-Nanowire Solar Cells**

Han Yan, Jon Hollinger, Colin R. Bridges, George R. McKeown, Tamara Al-Faouri, and Dwight S. Seferos*



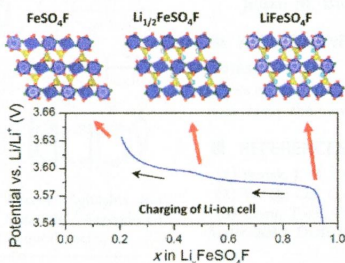
Surfactants with Aromatic-Group Tail and Single Quaternary Ammonium Head for Directing Single-Crystalline Mesostructured Zeolite Nanosheets

Dongdong Xu, Zhifeng Jing, Fenglei Cao, Huai Sun,* and Shunai Che*



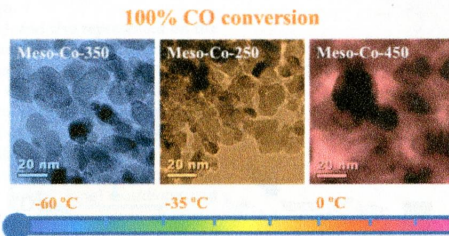
Identification of an Intermediate Phase, $\text{Li}_{1/2}\text{FeSO}_4\text{F}$, Formed during Electrochemical Cycling of *Tavorite* LiFeSO_4F

Adam Sobkowiak,* Matthew R. Roberts, Lennart Högström, Tore Ericsson, Anna M. Andersson, Kristina Edström, Torbjörn Gustafsson, and Fredrik Björefors*



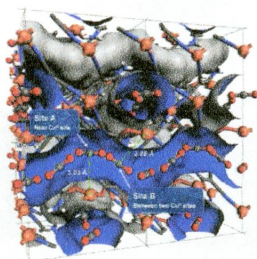
Mesoporous Co_3O_4 with Controlled Porosity: Inverse Micelle Synthesis and High-Performance Catalytic CO Oxidation at $-60\text{ }^\circ\text{C}$

Wenqiao Song, Altug S. Poyraz, Yongtao Meng, Zheng Ren, Sheng-Yu Chen, and Steven L. Suib*

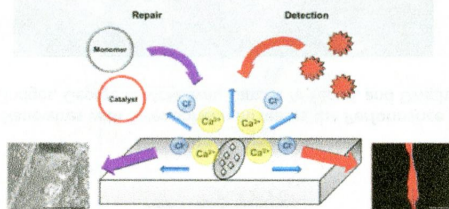


Ultramicroporous MOF with High Concentration of Vacant Cu^{II} Sites

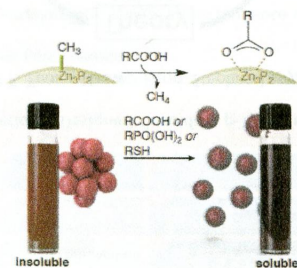
Laura J. McCormick, Samuel G. Duyker, Aaron W. Thornton, Chris S. Hawes, Matthew R. Hill, Vanessa K. Peterson, Stuart R. Batten, and David. R. Turner*

**Triggered Detection and Deposition: Toward the Repair of Microcracks**

Vinita Yadav, Ryan A. Pavlick, Stephen M. Meckler, and Ayusman Sen*

**Elucidating the Surface Chemistry of Zinc Phosphide Nanoparticles Through Ligand Exchange**

Md Hosnay Mobarok and Jillian M. Buriak*



Is Graphene a Stable Platform for Photocatalysis? Mineralization of Reduced Graphene Oxide With UV-Irradiated TiO_2 Nanoparticles

James G. Radich, Anthony L. Krenselewski, Jiadong Zhu, and Prashant V. Kamat*

