cm CHEMISTRY OF MATERIALS

SEPTEMBER 9, 2014 | VOLUME 26 | NUMBER 17 | pubs.acs.org/cm

ACS Publications
Most Trusted. Most Cited. Most Read.

www.acs.org

CHEMISTRY OF MATERIALS

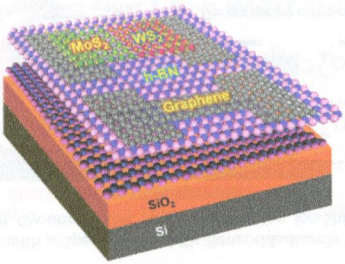
SEPTEMBER 9, 2014
VOLUME 26 ISSUE 17

CMATEX 26(17) 4889–5180 (2014)
ISSN 0897-4756
Registered in the U.S. Patent and Trademark Office

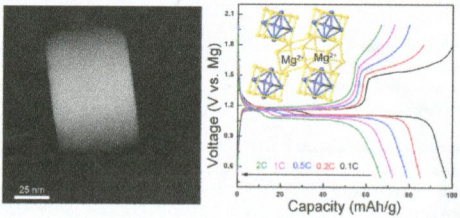
ON THE COVER: Bio-inspired crystal synthesis in combination with high-resolution synchrotron powder diffraction was used to demonstrate that a recombinant GFP-tagged biomineralization protein is incorporated into the crystal lattice of calcite to an extent comparable to the natural system. In contrast, pure GFP is hardly incorporated at all. This approach opens a promising route toward the synthesis of new and improved biocomposite materials. For more information, see "Incorporation of a Recombinant Biomineralization Fusion Protein into the Crystalline Lattice of Calcite" by Eva Weber, Leonid Bloch, Christina Guth, Andy N. Fitch, Ingrid M. Weiss, and Boaz Pokroy* (*Chem. Mater.* **2014**, *26*, 4925–4932).

Editorial

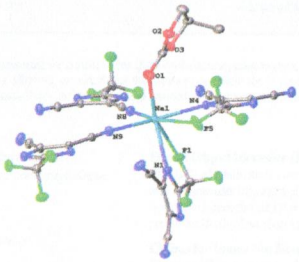
Perspectives

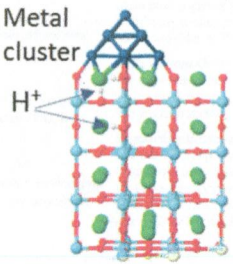


Communications



Articles



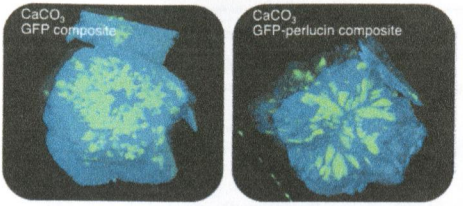


4925 S

dx.doi.org/10.1021/cm500450s

Incorporation of a Recombinant Biomineralization Fusion Protein into the Crystalline Lattice of Calcite

Eva Weber, Leonid Bloch, Christina Guth, Andy N. Fitch, Ingrid M. Weiss, and Boaz Pokroy*

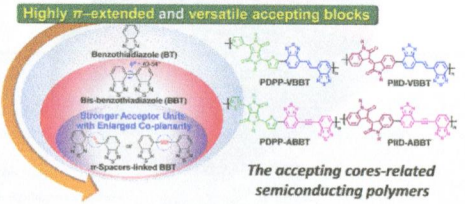


4933 S

dx.doi.org/10.1021/cm500800u

Ambipolar Semiconducting Polymers with π-Spacer Linked Bis-Benzothiadiazole Blocks as Strong Accepting Units

Jonggi Kim, A-Reum Han, Jayeon Hong, Gyoungsik Kim, Junghoon Lee, Tae Joo Shin, Joon Hak Oh,* and Changduk Yang*

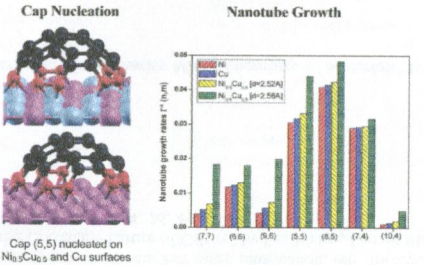


4943

dx.doi.org/10.1021/cm501167z

Predicting the Chiral Enrichment of Metallic SWCNTs on Ni–Cu Bimetallic Surfaces

Debosruti Dutta, R. Mohan Sankaran, and Venkat R. Bhethanabotla*

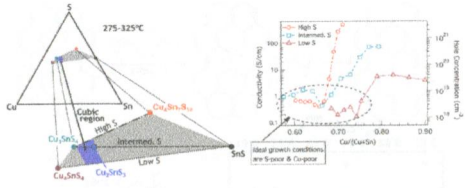


4951 S

dx.doi.org/10.1021/cm501339v

Control of Doping in Cu_2SnS_3 through Defects and Alloying

Lauryn L. Baranowski, Pawel Zawadzki, Steven Christensen, Dennis Nordlund, Stephan Lany, Adele C. Tamboli, Lynn Gedvilas, David S. Ginley, William Tumas, Eric S. Toberer, and Andriy Zakutayev*

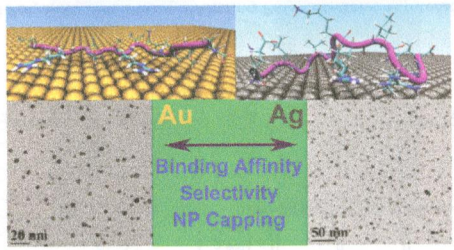


4960 S

dx.doi.org/10.1021/cm501529u

Comparative Study of Materials-Binding Peptide Interactions with Gold and Silver Surfaces and Nanostructures: A Thermodynamic Basis for Biological Selectivity of Inorganic Materials

J. Pablo Palafox-Hernandez, Zhenghua Tang, Zak E. Hughes, Yue Li, Mark T. Swihart, Paras N. Prasad, Tiffany R. Walsh,* and Marc R. Knecht*

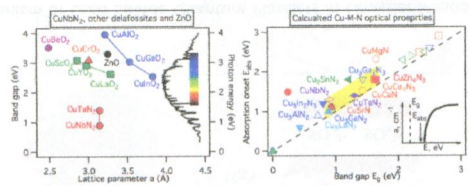


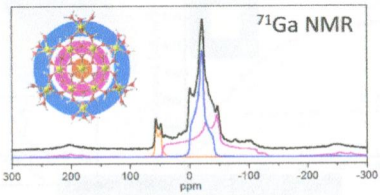
4970 S

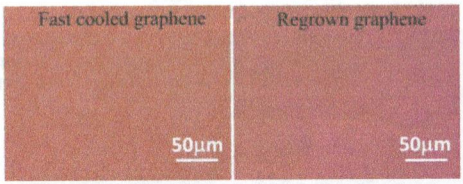
dx.doi.org/10.1021/cm5018135

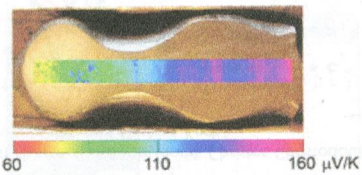
Experimental Synthesis and Properties of Metastable $CuNbN_2$ and Theoretical Extension to Other Ternary Copper Nitrides

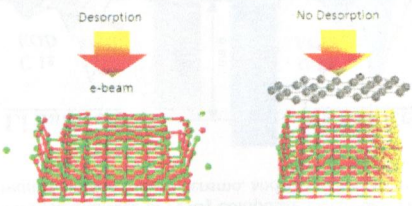
Andriy Zakutayev, Amy J. Allen, Xiuwen Zhang, Julien Vidal, Zhiming Cui, Stephan Lany,* Minghui Yang,* Francis J. DiSalvo, and David S. Ginley









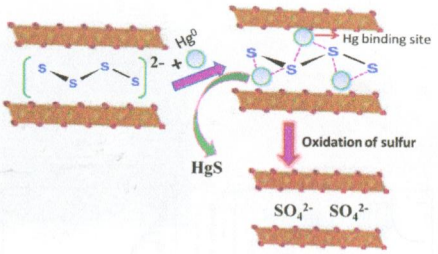


5004 S

dx.doi.org/10.1021/cm5020477

Efficient Hg Vapor Capture with Polysulfide Intercalated Layered Double Hydroxides

Shulan Ma, Yurina Shim, Saiful M. Islam, K. S. Subrahmanyam, Pengli Wang, Hao Li, Shichao Wang, Xiaojing Yang, and Mercouri G. Kanatzidis*

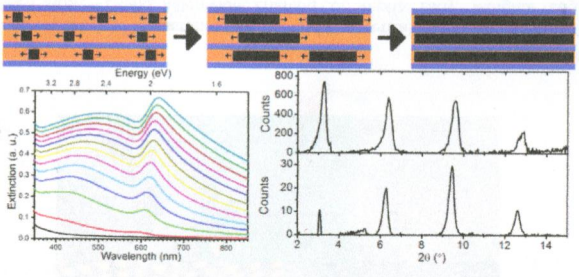


5012 S

dx.doi.org/10.1021/cm5020702

Synthesis and Growth Mechanism of Lead Sulfide Quantum Platelets in Lamellar Mesophase Templates

Paul J. Morrison, Richard A. Loomis, and William E. Buhro*

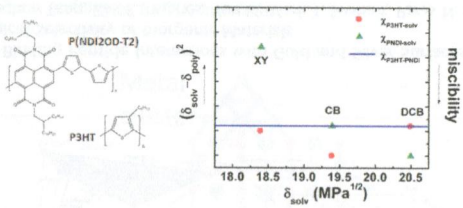


5020 S

dx.doi.org/10.1021/cm502112z

Tuning the Morphology of All-Polymer OPVs through Altering Polymer–Solvent Interactions

Eleni Pavlopoulou, Chang Su Kim, Stephanie S. Lee, Zhihua Chen, Antonio Facchetti, Michael F. Toney, and Yueh-Lin Loo*

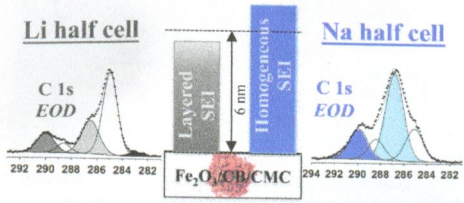


5028

dx.doi.org/10.1021/cm5021367

Investigation of the Electrode/Electrolyte Interface of Fe_2O_3 Composite Electrodes: Li vs Na Batteries

Bertrand Philippe,* Mario Valvo, Fredrik Lindgren, Håkan Rensmo, and Kristina Edström

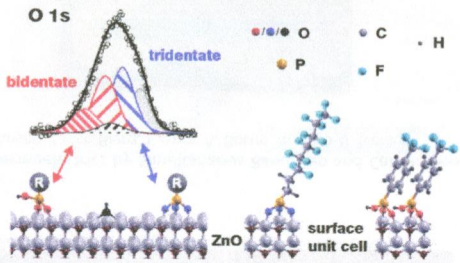


5042 S

dx.doi.org/10.1021/cm502171m

Surface Modification of ZnO(0001)−Zn with Phosphonate-Based Self-Assembled Monolayers: Binding Modes, Orientation, and Work Function

Melanie Timpel, Marco V. Nardi, Stefan Krause, Giovanni Ligorio, Christos Christodoulou, Luca Pasquali, Angelo Giglia, Johannes Frisch, Berthold Wegner, Paolo Moras, and Norbert Koch*

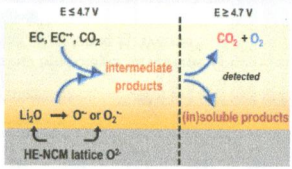


5051 S

dx.doi.org/10.1021/cm502201z

Differential Electrochemical Mass Spectrometry Study of the Interface of $xLi_2MnO_3{\cdot}(1-x)LiMO_2$ (M = Ni, Co, and Mn) Material as a Positive Electrode in Li-Ion Batteries

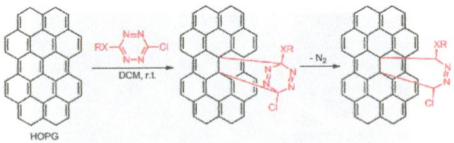
Elias Castel, Erik J. Berg, Mario El Kazzi, Petr Novák,* and Claire Villevieille



5058 S dx.doi.org/10.1021/cm502253y

Facile Covalent Modification of a Highly Ordered Pyrolytic Graphite Surface via an Inverse Electron Demand Diels–Alder Reaction under Ambient Conditions

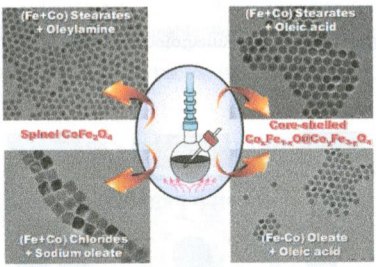
Jun Zhu, Jonathan Hiltz, Mohamed Amine Mezour, Vadim Bernard-Gauthier, R. Bruce Lennox,* and Ralf Schirrmacher*



5063 S dx.doi.org/10.1021/cm502269s

Tuning of Synthesis Conditions by Thermal Decomposition toward Core–Shell $Co_xFe_{1-x}O@Co_yFe_{3-y}O_4$ and $CoFe_2O_4$ Nanoparticles with Spherical and Cubic Shapes

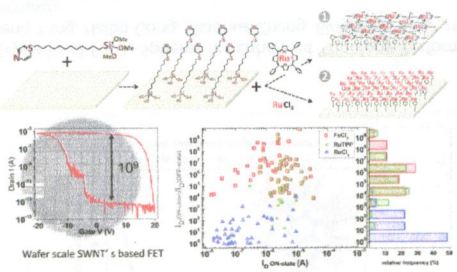
Walid Baaziz,* Benoit P. Pichon, Yu Liu, Jean-Marc Grenèche, Corinne Ulhaq-Bouillet, Erwan Terrier, Nicolas Bergeard, Valérie Halté, Christine Boeglin, Fadi Choueikani, Mohamed Toumi, Tahar Mhiri, and Sylvie Begin-Colin*



5074 S dx.doi.org/10.1021/cm502282x

Direct Synthesis and Integration of Individual, Diameter-Controlled Single-Walled Nanotubes (SWNTs)

Fatima Z. Bouanis,* Costel S. Cojocaru,* Vincent Huc, Evgeny Norman, Marc Chaigneau, Jean-Luc Maurice, Talal Mallah, and Didier Pribat

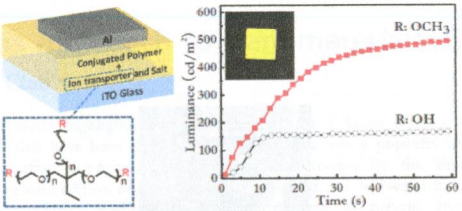


5083 S

dx.doi.org/10.1021/cm5022905

Identifying Key Properties of Electrolytes for Light-Emitting Electrochemical Cells

Shi Tang, Jonas Mindemark, Carlos Moyses Graca Araujo, Daniel Brandell, and Ludvig Edman*

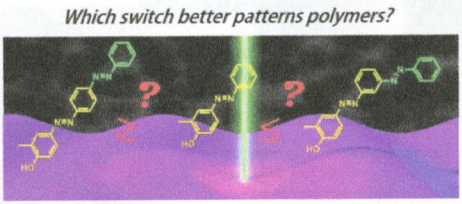


5089

dx.doi.org/10.1021/cm5023129

Are Two Azo Groups Better than One? Investigating the Photoresponse of Polymer-Bisazobenzene Complexes

Jaana Vapaavuori,* Alexis Goulet-Hanssens,* Ismo T.S. Heikkinen, Christopher J. Barrett, and Arri Priimagi

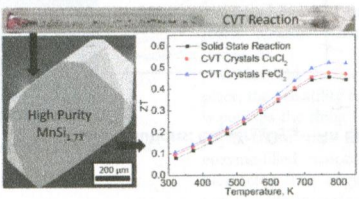


5097 S

dx.doi.org/10.1021/cm5023823

Thermoelectric Properties of Undoped High Purity Higher Manganese Silicides Grown by Chemical Vapor Transport

Steven N. Girard, Xi Chen, Fei Meng, Ankit Pokhrel, Jianshi Zhou, Li Shi, and Song Jin*

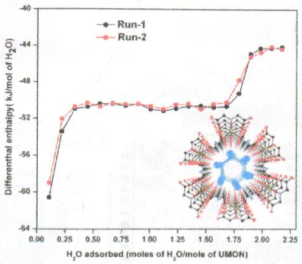


5105 S

dx.doi.org/10.1021/cm5024053

Energetics of Formation and Hydration of a Porous Metal Organic Nanotube

Sulata K. Sahu, Daniel K. Unruh, Tori Z. Forbes,* and Alexandra Navrotsky

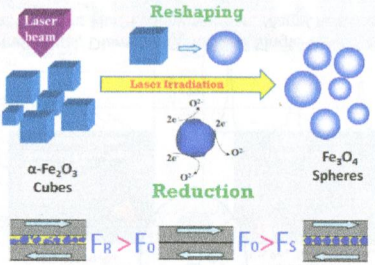


5113 S

dx.doi.org/10.1021/cm502426y

Submicron-Lubricant Based on Crystallized Fe_3O_4 Spheres for Enhanced Tribology Performance

Xiaoyun Song, Zhiwen Qiu, Xiaopeng Yang, Haibo Gong, Shaohua Zheng, Bingqiang Cao,* Hongqiang Wang,* Helmuth Möhwald, and Dmitry Shchukin

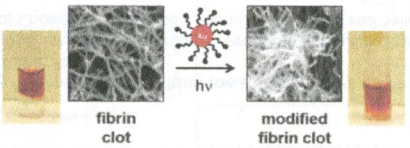


5120 S

dx.doi.org/10.1021/cm5024713

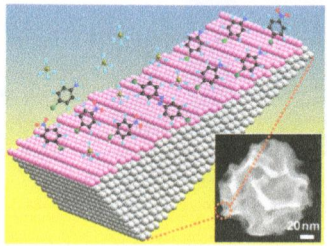
Non-Enzymatic Remodeling of Fibrin Biopolymers via Photothermally Triggered Radical-Generating Nanoparticles

Joan M. Walker and Jeffrey M. Zaleski*



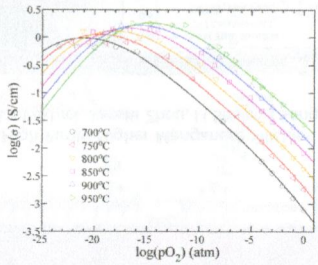
5131 (S) dx.doi.org/10.1021/cm502508d

Nanoporosity-Enhanced Catalysis on Subwavelength Au Nanoparticles: a Plasmon-Enhanced Spectroscopic Study
Qingfeng Zhang, Douglas A. Blom, and Hui Wang*



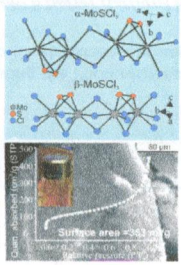
5143 (S) dx.doi.org/10.1021/cm502565b

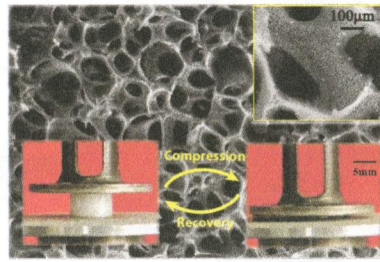
Defect and Transport Model of Ceria–Zirconia Solid Solutions: $Ce_{0.8}Zr_{0.2}O_{2-\delta}$—An Electrical Conductivity Study
Di Chen, Yidan Cao, Duan Weng, and Harry L. Tuller*

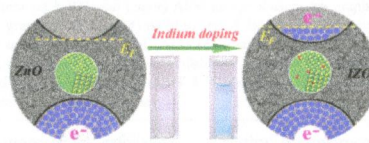


5151 (S) dx.doi.org/10.1021/cm5024579

One-Dimensional Molybdenum Thiochlorides and Their Use in High Surface Area MoS_x Chalcogels
Saiful M. Islam, Kota S. Subrahmanyam, Christos D. Malliakas, and Mercouri G. Kanatzidis*







Additions and Corrections

(S) Supporting Information available via online article