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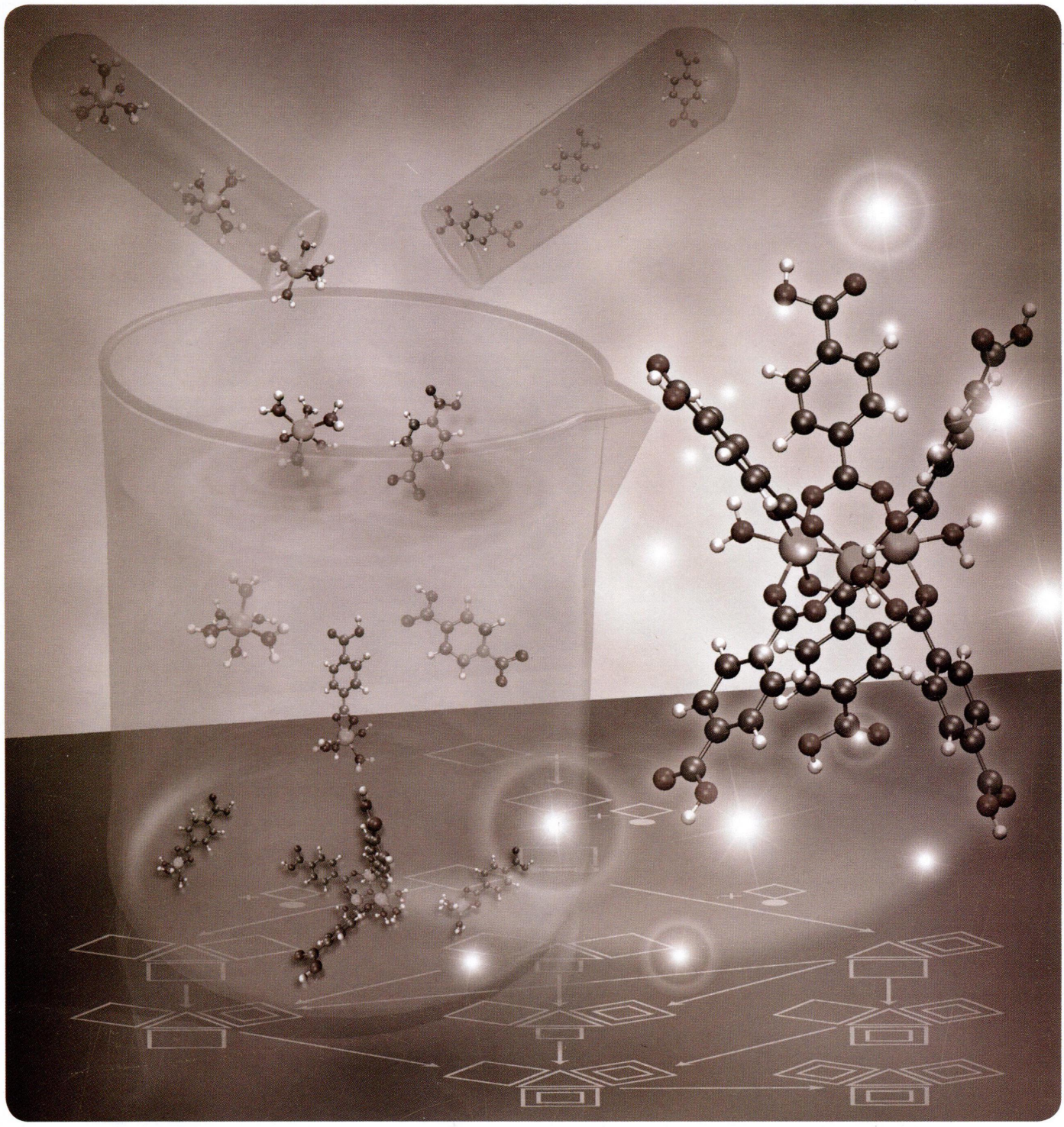

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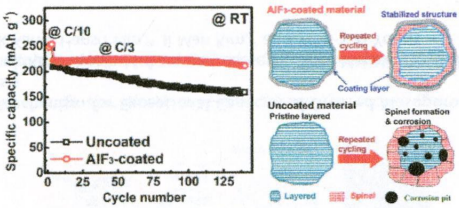
ON THE COVER: The development of rational synthetic strategies for metal–organic frameworks (MOFs) remains a challenge for this important class of materials. State-of-the-art molecular simulations were applied to uncover the individual elementary reaction steps leading to the self-assembly of secondary building units formed during hydrothermal synthesis of MOF MIL-101. Metal–ligand coordination, exchange reactions, and metal core spin states were taken into account. A microkinetic reaction network model was used to predict cluster formation rates based on the lowest energy barrier pathways, which correlated well with experimentally measured nucleation rates. The cover art was jointly prepared by the authors and Cortland Johnson of Pacific Northwestern National Laboratory. For more information, see "Formation Mechanism of the Secondary Building Unit in a Chromium Terephthalate Metal–Organic Framework" by David C. Cantu, B. Peter McGrail, and Vassiliki-Alexandra Glezakou* (*Chem. Mater.* **2014**, *26*, 6401–6409).

Editorial

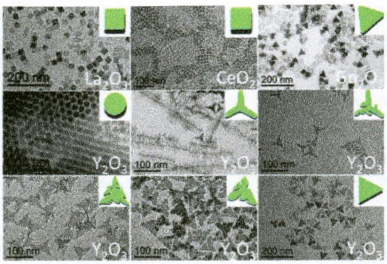
Articles



6328 S DOI: 10.1021/cm502301u

Mineralizer-Assisted Shape-Control of Rare Earth Oxide Nanoplates

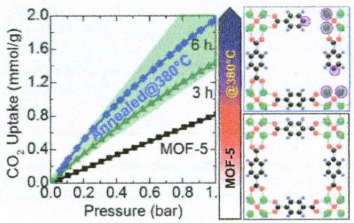
Dianyuan Wang, Yijin Kang, Xingchen Ye, and Christopher B. Murray*



6333 S DOI: 10.1021/cm502399q

Postsynthesis Annealing of MOF-5 Remarkably Enhances the Framework Structural Stability and CO_2 Uptake

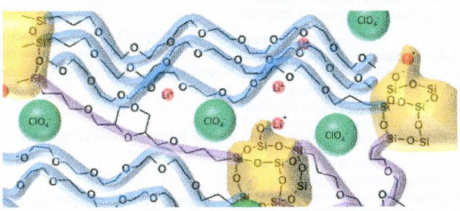
Srinivas Gadipelli* and Zhengxiao Guo*



6339 S DOI: 10.1021/cm5024647

Highly Conducting 3D-Hybrid Polymer Electrolytes for Lithium Batteries Based on Siloxane Networks and Cross-Linked Organic Polar Interphases

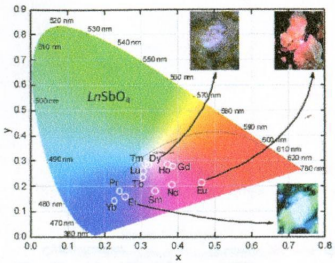
Nicola Boaretto, Andreas Bittner, Christine Brinkmann, Birke-Elisabeth Olsowski, Jochen Schulz, Mona Seyfried, Keti Vezzù, Michael Popall, and Vito Di Noto*



6351 (S) DOI: 10.1021/cm502504b

Lanthanide Orthoantimonate Light Emitters: Structural, Vibrational, and Optical Properties

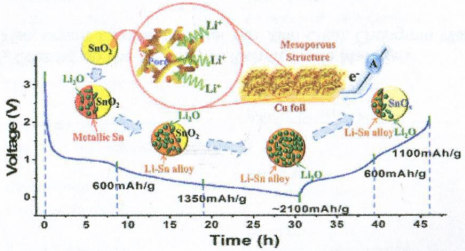
Kisla P. F. Siqueira, Patrícia P. Lima, Rute A. S. Ferreira, Luís D. Carlos, Eduardo M. Bittar, Eduardo Granado, Juan Carlos González, Arturo Abelenda, Roberto L. Moreira, and Anderson Dias*



6361 DOI: 10.1021/cm5025603

New Insight into the Reaction Mechanism for Exceptional Capacity of Ordered Mesoporous SnO_2 Electrodes via Synchrotron-Based X-ray Analysis

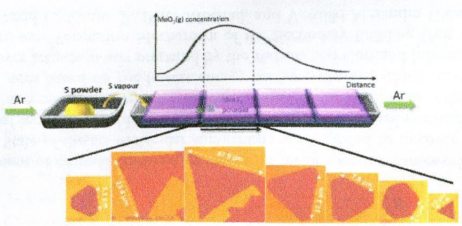
Hyunchul Kim, Gwi Ok Park, Yunok Kim, Shoaib Muhammad, Jaeseung Yoo, Mahalingam Balasubramanian, Yong-Hun Cho, Min-Gyu Kim, Byungju Lee, Kisuk Kang, Hansu Kim,* Ji Man Kim,* and Won-Sub Yoon*



6371 (S) DOI: 10.1021/cm5025662

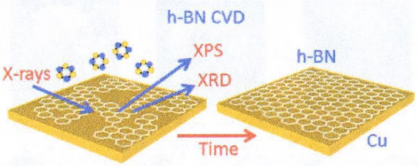
Shape Evolution of Monolayer MoS_2 Crystals Grown by Chemical Vapor Deposition

Shanshan Wang, Youmin Rong, Ye Fan, Mercè Pacios, Harish Bhaskaran, Kuang He, and Jamie H. Warner*



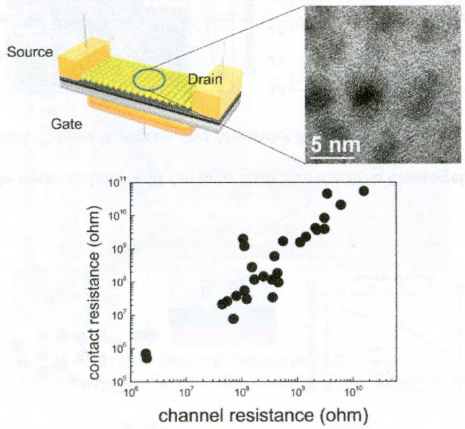
6380 S DOI: 10.1021/cm502603n

In Situ Observations during Chemical Vapor Deposition of Hexagonal Boron Nitride on Polycrystalline Copper
Piran R. Kidambi, Raoul Blume, Jens Kling, Jakob B. Wagner, Carsten Baehtz, Robert S. Weatherup, Robert Schloegl, Bernhard C. Bayer, and Stephan Hofmann*



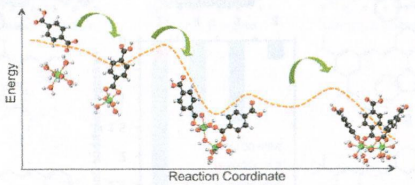
6393 S DOI: 10.1021/cm502763z

Competition between Charge Transport and Energy Barrier in Injection-Limited Metal/Quantum Dot Nanocrystal Contacts
Youngjun Kim, Seongeun Cho, Sunho Jeong, Doo-Hyun Ko, Hyungduk Ko, Namho You, Mincheol Chang, Elsa Reichmanis, Jun-Young Park, Sung Young Park, Jong Suk Lee,* Heesun Yang,* Insik In,* and Byoungnam Park*



6401 S DOI: 10.1021/cm5027859

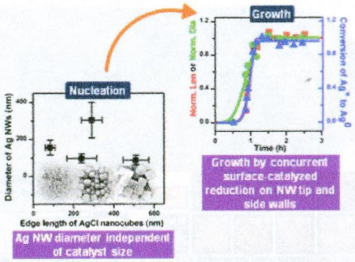
Formation Mechanism of the Secondary Building Unit in a Chromium Terephthalate Metal–Organic Framework
David C. Cantu, B. Peter McGrail, and Vassiliki-Alexandra Glezakou*



6410 S DOI: 10.1021/cm502827b

Polyol Synthesis of Silver Nanowires by Heterogeneous Nucleation; Mechanistic Aspects Influencing Nanowire Diameter and Length

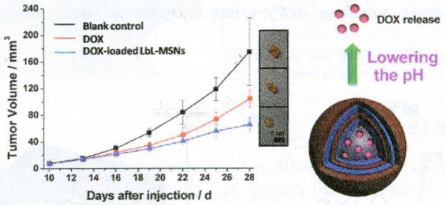
Waynie M. Schuette and William E. Buhro*



6418 S DOI: 10.1021/cm503304p

Mesoporous Silica Nanoparticles Coated by Layer-by-Layer Self-assembly Using Cucurbit[7]uril for in Vitro and in Vivo Anticancer Drug Release

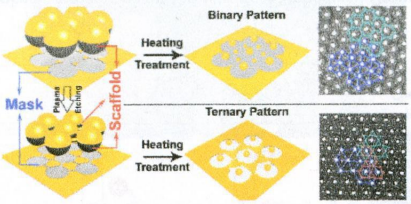
Qing-Lan Li, Yanfang Sun, Yu-Long Sun, Jijie Wen, Yue Zhou, Qi-Ming Bing, Lyle D. Isaacs, Yinghua Jin, Hui Gao,* and Ying-Wei Yang*



6432 S DOI: 10.1021/cm502860r

Combining the Masking and Scaffolding Modalities of Colloidal Crystal Templates: Plasmonic Nanoparticle Arrays with Multiple Periodicities

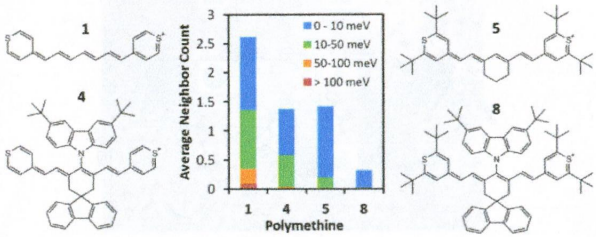
Shikuan Yang,* Daniel Slotcavage, John D. Mai, Wansheng Liang, Yuliang Xie, Yuchao Chen, and Tony Jun Huang*



6439 DOI: 10.1021/cm5028755

Effect of Bulky Substituents on Thiopyrylium Polymethine Aggregation in the Solid State: A Theoretical Evaluation of the Implications for All-Optical Switching Applications

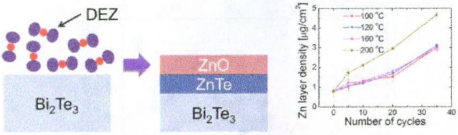
Rebecca L. Gieseking, Sukrit Mukhopadhyay, Chad Risko, Seth R. Marder, and Jean-Luc Brédas*



6448 DOI: 10.1021/cm502940v

Enhancement of Initial Growth of ZnO Films on Layer-Structured Bi_2Te_3 by Atomic Layer Deposition

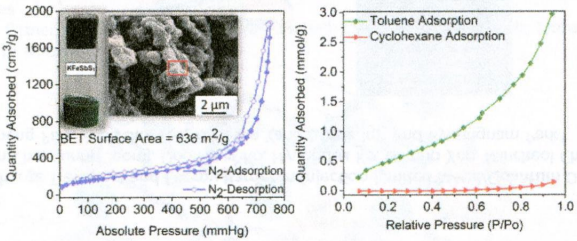
Kwang-Chon Kim, Cheol Jin Cho, Joohwi Lee, Hyun Jae Kim, Doo Seok Jeong, Seung-Hyub Baek, Jin-Sang Kim,* and Seong Keun Kim*



6454 DOI: 10.1021/cm502942w

Selective Adsorption of Volatile Hydrocarbons and Gases in High Surface Area Chalcogels Containing $[ES_3]^{3-}$ Anions (E = As, Sb)

Ejaz Ahmed, Jayaprakash Khanderi, Dalaver H. Anjum, and Alexander Rothenberger*

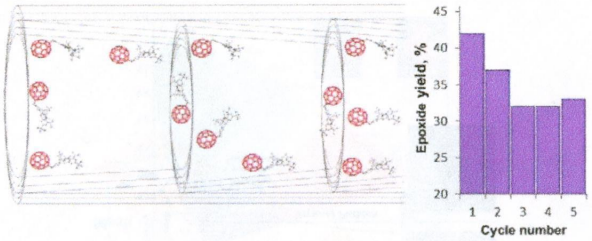


6461 S

DOI: 10.1021/cm502986d

New Pathway for Heterogenization of Molecular Catalysts by Non-covalent Interactions with Carbon Nanoreactors

Maria A. Lebedeva, Thomas W. Chamberlain, Martin Schröder, and Andrei N. Khlobystov*

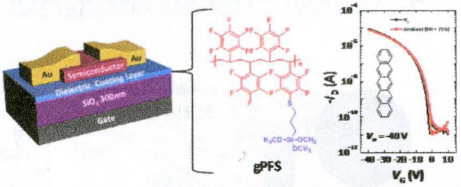


6467 S

DOI: 10.1021/cm5030266

Grafting Fluorinated Polymer Nanolayer for Advancing the Electrical Stability of Organic Field-Effect Transistors

Kyunghun Kim, Tae Kyu An, Jiye Kim, Yong Jin Jeong, Jaeyoung Jang, Haekyung Kim, Jang Yeol Baek, Yun-Hi Kim,* Se Hyun Kim,* and Chan Eon Park*

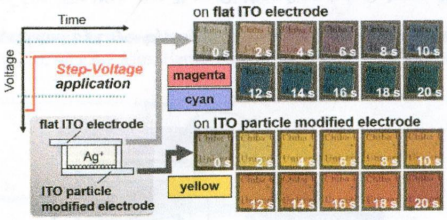


6477 S

DOI: 10.1021/cm5039039

Multicolor Electrochromism Showing Three Primary Color States (Cyan–Magenta–Yellow) Based on Size- and Shape-Controlled Silver Nanoparticles

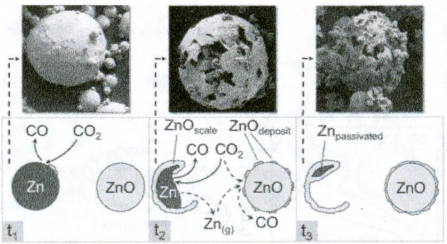
Ayako Tsuboi, Kazuki Nakamura, and Norihisa Kobayashi*



6486 S DOI: 10.1021/cm503064f

Mechanism of Zn Particle Oxidation by H_2O and CO_2 in the Presence of ZnO

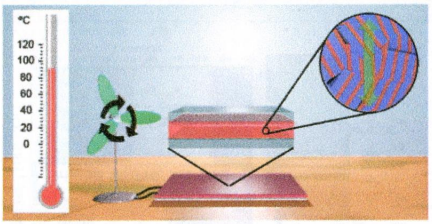
David Weibel, Zoran R. Jovanovic,* Elena Gálvez, and Aldo Steinfeld



6496 S DOI: 10.1021/cm503090z

Nanostructured Two-Component Liquid-Crystalline Electrolytes for High-Temperature Dye-Sensitized Solar Cells

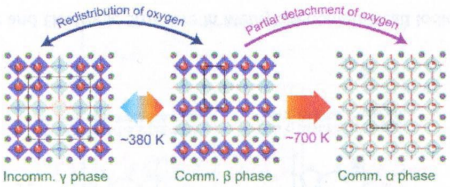
Daniel Högberg, Bartolome Soberats, Satoshi Uchida, Masafumi Yoshio, Lars Kloo, Hiroshi Segawa, and Takashi Kato*



6503 S DOI: 10.1021/cm503132e

Structural Evolution of $GdBaCo_2O_{5+\delta}$ (δ = 7/18) at Elevated Temperatures

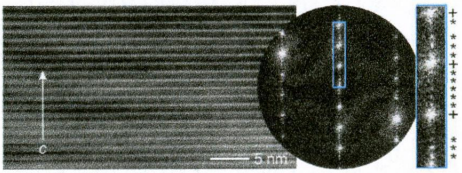
Nobuo Ishizawa,* Toru Asaka, Tatsunari Kudo, Koichiro Fukuda, Akira Yasuhara, Nobuyuki Abe, and Taka-hisa Arima



6518 DOI: 10.1021/cm5031574

Synthesis and Thermal Instability of High-Quality Bi_2Te_3/Sb_2Te_3 Superlattice Thin Film Thermoelectrics

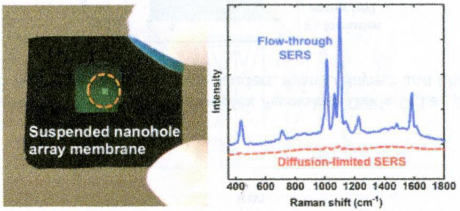
Anna-Lena Hansen, Torben Dankwort, Markus Winkler, Jeffrey Ditto, Dave C. Johnson, Jan D. Koenig, Kilian Bartholomé, Lorenz Kienle,* and Wolfgang Bensch*



6523 DOI: 10.1021/cm5031848

Millimeter-Sized Suspended Plasmonic Nanohole Arrays for Surface-Tension-Driven Flow-Through SERS

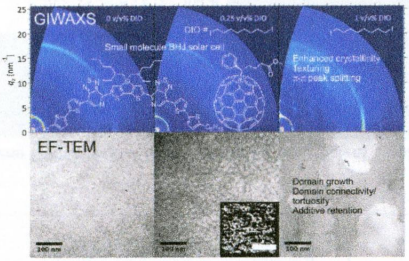
Shailabh Kumar, Sudhir Cherukulappurath, Timothy W. Johnson, and Sang-Hyun Oh*



6531 DOI: 10.1021/cm5031987

The Role of Solvent Additive Processing in High Performance Small Molecule Solar Cells

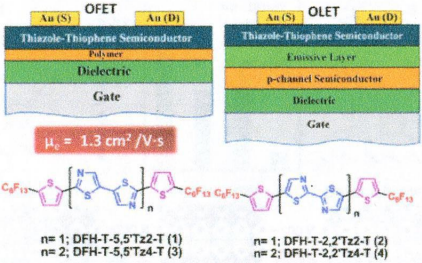
Louis A. Perez, James T. Rogers, Michael A. Brady, Yanming Sun, Gregory C. Welch, Kristin Schmidt, Michael F. Toney, Hiroshi Jinnai, Alan J. Heeger, Michael L. Chabinyc, Guillermo C. Bazan,* and Edward J. Kramer*



6542 S DOI: 10.1021/cm503203w

Perfluoroalkyl-Functionalized Thiazole–Thiophene Oligomers as N-Channel Semiconductors in Organic Field-Effect and Light-Emitting Transistors

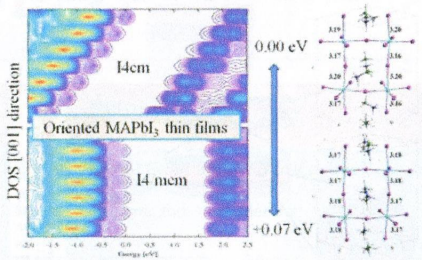
Hakan Usta,* William Christopher Sheets, Mitchell Denti, Gianluca Generali, Raffaella Capelli, Shaofeng Lu, Xinge Yu, Michele Muccini,* and Antonio Facchetti*



6557 S DOI: 10.1021/cm5032046

Interplay of Orientational Order and Electronic Structure in Methylammonium Lead Iodide: Implications for Solar Cell Operation

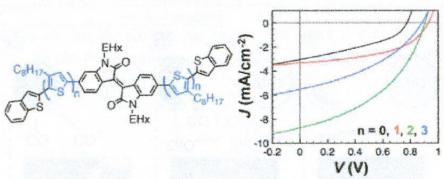
Claudio Quarti, Edoardo Mosconi, and Filippo De Angelis*



6570 S DOI: 10.1021/cm503312c

Isoindigo-Containing Molecular Semiconductors: Effect of Backbone Extension on Molecular Organization and Organic Solar Cell Performance

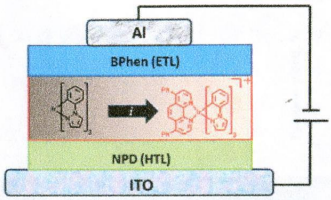
Yi Ren, Anna K. Hailey, Anna M. Hiszpanski, and Yueh-Lin Loo*



6578 DOI: 10.1021/cm503336d

In Situ Observation of Degradation by Ligand Substitution in Small-Molecule Phosphorescent Organic Light-Emitting Diodes

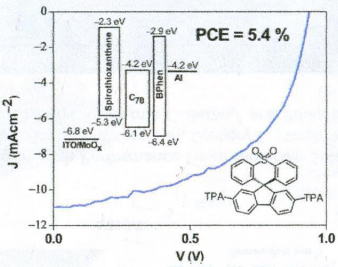
Matthew J. Jurow, Alberto Bossi, Peter I. Djurovich, and Mark E. Thompson*



6585 DOI: 10.1021/cm5033699

Hole-Transporting Spirothioxanthene Derivatives as Donor Materials for Efficient Small-Molecule-Based Organic Photovoltaic Devices

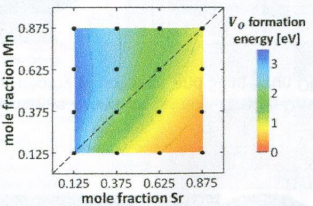
Chin-Yiu Chan, Yi-Chun Wong, Mei-Yee Chan,* Sin-Hang Cheung, Shu-Kong So, and Vivian Wing-Wah Yam*



6595 DOI: 10.1021/cm5033755

Tunable Oxygen Vacancy Formation Energetics in the Complex Perovskite Oxide $Sr_xLa_{1-x}Mn_yAl_{1-y}O_3$

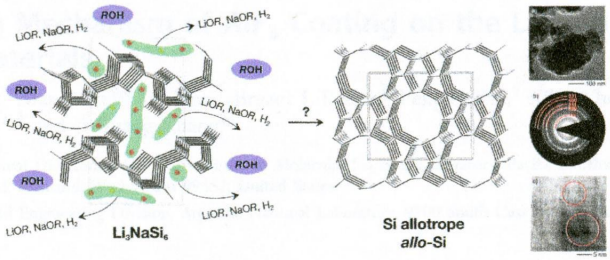
Ann M. Deml, Vladan Stevanović, Aaron M. Holder, Michael Sanders, Ryan O'Hayre,* and Charles B. Musgrave*



6603 S DOI: 10.1021/cm503371e

Alkali Metals Extraction Reactions with the Silicides $Li_{15}Si_4$ and Li_3NaSi_6: Amorphous Si *versus allo*-Si

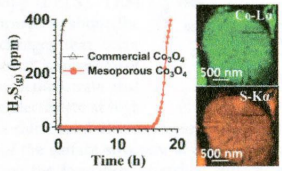
Michael Zeilinger, Laura-Alice Jantke, Lavinia M. Scherf, Florian J. Kiefer, Gero Neubüser, Lorenz Kienle, Antti J. Karttunen, Sumit Konar, Ulrich Häussermann, and Thomas F. Fässler*



6613 S DOI: 10.1021/cm503405a

Low Temperature Desulfurization of H_2S: High Sorption Capacities by Mesoporous Cobalt Oxide via Increased H_2S Diffusion

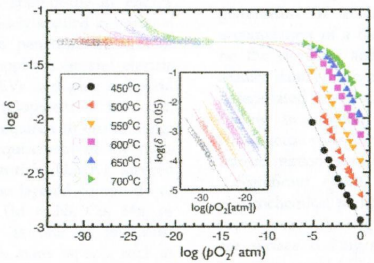
Lakshitha R. Pahalagedara, Altug S. Poyraz, Wenqiao Song, Chung-Hao Kuo, Madhavi N. Pahalagedara, Yong-Tao Meng, and Steven L. Suib*



6622 DOI: 10.1021/cm503440v

Nonstoichiometry in Oxide Thin Films Operating under Anodic Conditions: A Chemical Capacitance Study of the Praseodymium–Cerium Oxide System

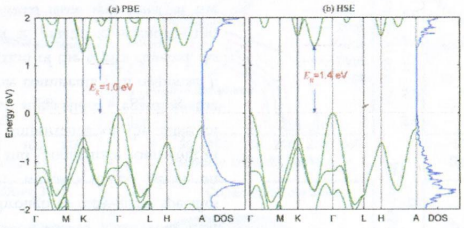
Di Chen, Sean R. Bishop, and Harry L. Tuller*



6628 DOI: 10.1021/cm503487n

WS_2 As an Excellent High-Temperature Thermoelectric Material

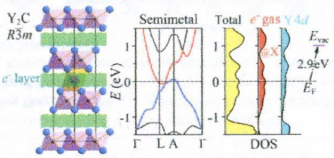
Appala Naidu Gandi and Udo Schwingenschlögl*



6638 DOI: 10.1021/cm503512h

Two-Dimensional Transition-Metal Electride Y_2C

Xiao Zhang, Zewen Xiao, Hechang Lei, Yoshitake Toda, Satoru Matsuishi, Toshio Kamiya, Shigenori Ueda, and Hideo Hosono*



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Tuning the Photophysical Properties of Metal-Free Room Temperature Organic Phosphors via Compositional Variations in Bromobenzaldehyde/Dibromobenzene Mixed Crystals

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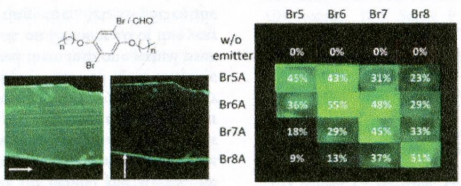

Ⓢ Supporting Information available via online article