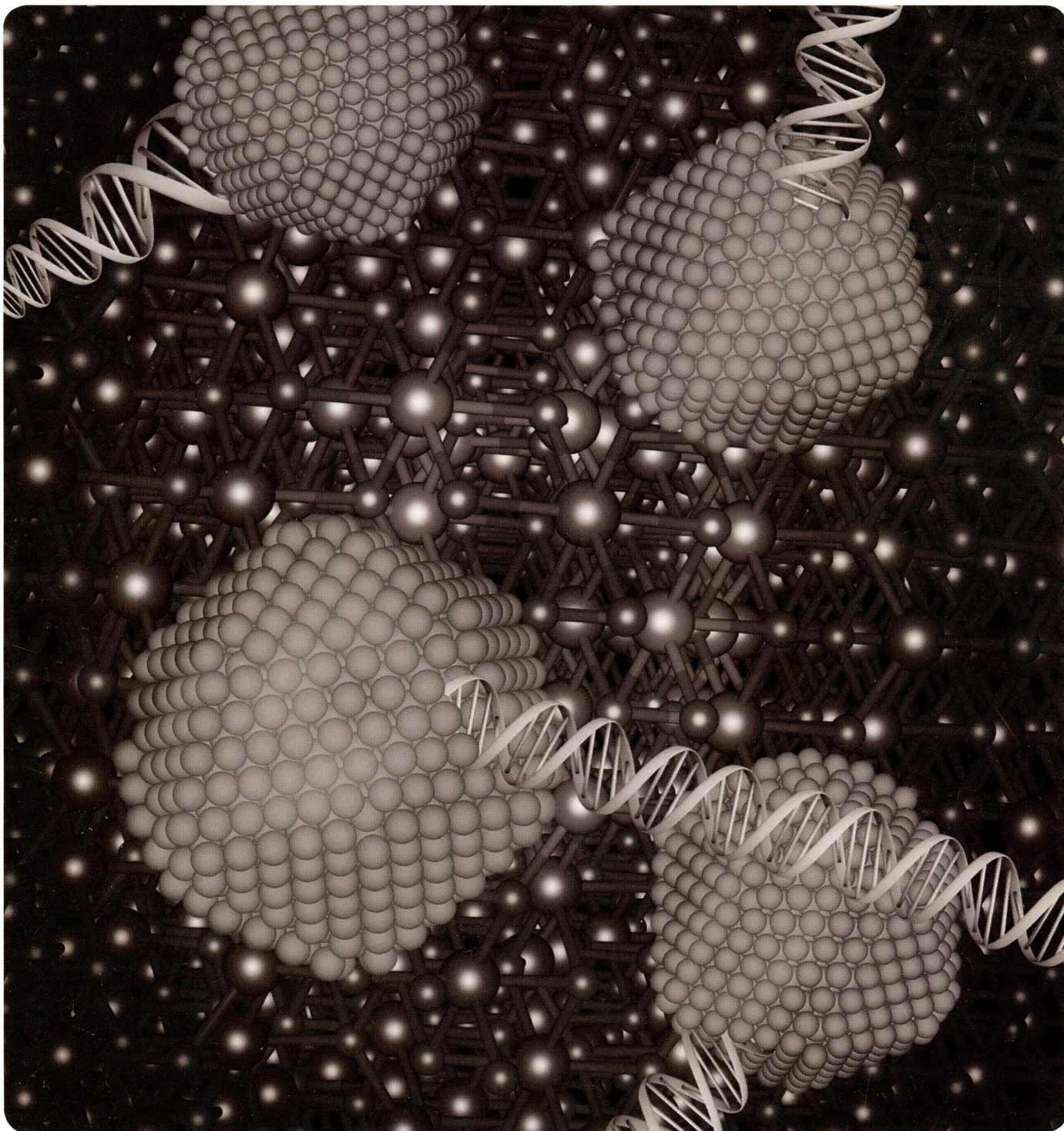


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**ON THE COVER:** Hybrid materials based on magnetic iron oxide nanoparticles with attached noble metals (gold, silver) exhibit a huge potential not only in sensing applications but also in the fields of magnetically separable catalysts, magnetically assisted SERS, or separation/detection of various biological substances. This cover features a schematic representation of magnetic nanosensors based on iron oxide (background) and gold nanoclusters (yellow) for sensing of DNA as the model biomolecule. For more information, see “Nanocrystalline Iron Oxides, Composites, and Related Materials as a Platform for Electrochemical, Magnetic, and Chemical Biosensors” by Veronika Urbanova, Massimiliano Magro, Aharon Gedanken, Davide Baratella, Fabio Vianello,\* and Radek Zboril\* (*Chem. Mater.* 2014, 26, 6653–6673).

## Editorial

 6651 **S**

DOI: 10.1021/cm504118j

*Chemistry of Materials*’ 1k Club: Klaus-Dieter Kreuer. Establishing the Connection Between Materials and Proton Conductivity

Jillian M. Buriak\* and Carlos Toro

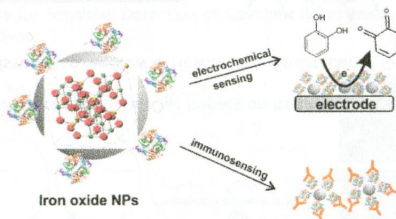
## Reviews

6653

DOI: 10.1021/cm500364x

Nanocrystalline Iron Oxides, Composites, and Related Materials as a Platform for Electrochemical, Magnetic, and Chemical Biosensors

Veronika Urbanova, Massimiliano Magro, Aharon Gedanken, Davide Baratella, Fabio Vianello,\* and Radek Zboril\*

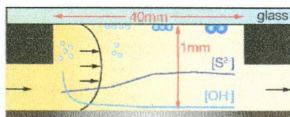


6674 **S**

DOI: 10.1021/cm501642a

Relating Deposition Conditions to Zn(S,O,OH) Thin Film Properties for Photovoltaic Buffer Layers Using a Continuous Flow Microreactor

Borirak Opananont, Austin G. Kuba, Evan G. Louderback, Kaushik Roy Choudhury, and Jason B. Baxter\*

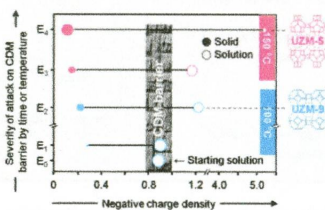


6684 **S**

DOI: 10.1021/cm501919d

Zeolite Synthesis from a Charge Density Perspective: The Charge Density Mismatch Synthesis of UZM-5 and UZM-9

Min Bum Park, Donghui Jo, Him Chan Jeon, Christopher P. Nicholas, Gregory J. Lewis,\* and Suk Bong Hong\*

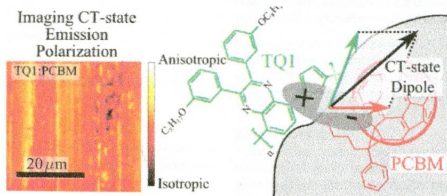


6695 **S**

DOI: 10.1021/cm502503f

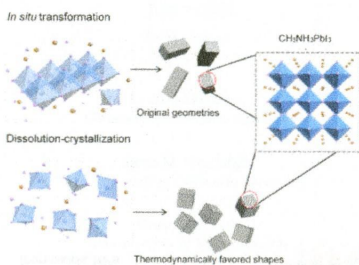
Polarization Imaging of Emissive Charge Transfer States in Polymer/Fullerene Blends

Rafael Camacho, Matthias Meyer, Koen Vandewal, Zheng Tang, Olle Inganäs, and Ivan G. Scheblykin\*



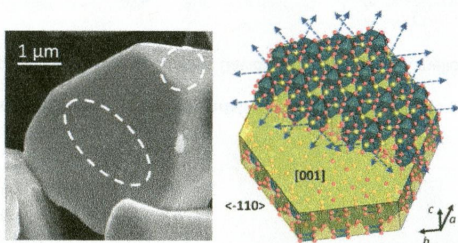
### Formation Mechanism of Freestanding $\text{CH}_3\text{NH}_3\text{PbI}_3$ Functional Crystals: In Situ Transformation vs Dissolution–Crystallization

Shuang Yang, Yi Chu Zheng, Yu Hou, Xiao Chen, Ying Chen, Yun Wang, Huijun Zhao, and Hua Gui Yang\*



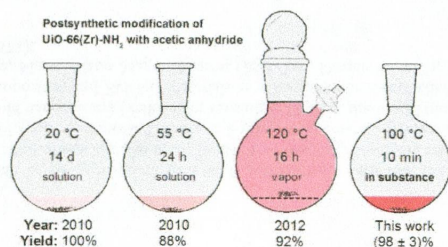
### Cu-Deficiency in the *p*-Type Semiconductor $\text{Cu}_{5-x}\text{Ta}_{11}\text{O}_{30}$ : Impact on Its Crystalline Structure, Surfaces, and Photoelectrochemical Properties

Ian Sullivan, Prangya P. Sahoo, Lindsay Fuoco, Andrew S. Hewitt, Sean Stuart, Daniel Dougherty, and Paul A. Maggard\*



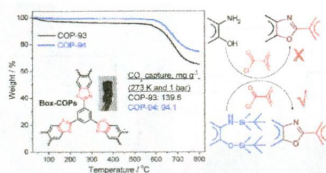
### Solvent-Free and Time Efficient Postsynthetic Modification of Amino-Tagged Metal–Organic Frameworks with Carboxylic Acid Derivatives

Henrik Hintz and Stefan Wuttke\*



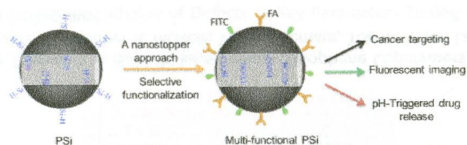
### Nanoporous Benzoxazole Networks by Silylated Monomers, Their Exceptional Thermal Stability, and Carbon Dioxide Capture Capacity

Hasmukh A. Patel, Dongah Ko, and Cafer T. Yavuz\*



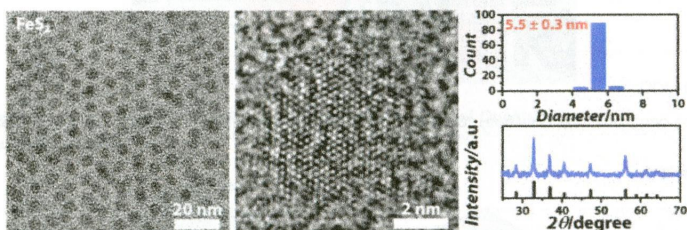
### A Nanostopper Approach To Selectively Engineer the Surfaces of Mesoporous Silicon

Wujun Xu, Jussi Rytönen, Seppo Rönkkö, Tuomo Nissinen, Tuure Kinnunen, Mika Suvanto, Ale Näränen, and Vesa-Pekka Lehto\*

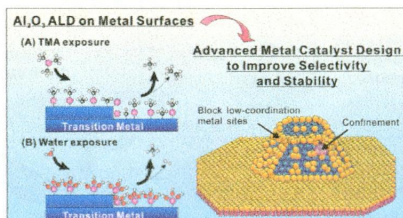


### Iron Pyrite Nanocrystal Inks: Solvothermal Synthesis, Digestive Ripening, and Reaction Mechanism

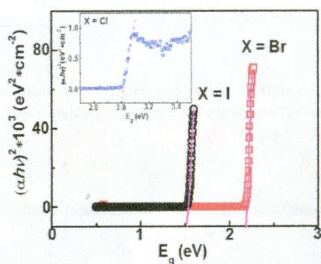
Tara S. Yoder, Jacqueline E. Cloud, G. Jeremy Leong, Doreen F. Molk, Matthew Tussing, Jonathan Miorelli, Chilan Ngo, Suneel Kodambaka, Mark E. Eberhart, Ryan M. Richards, and Yongan Yang\*



First-Principles Predictions and *in Situ* Experimental Validation of Alumina Atomic Layer Deposition on Metal Surfaces  
 Junling Lu, Bin Liu, Nathan P. Guisinger, Peter C. Stair, Jeffrey P. Greeley,\* and Jeffrey W. Elam\*

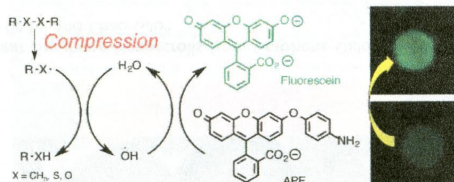


Properties of CH<sub>3</sub>NH<sub>3</sub>PbX<sub>3</sub> (X = I, Br, Cl) Powders as Precursors for Organic/Inorganic Solar Cells  
 L. Dimesso,\* M. Dimamay, M. Hamburger, and W. Jaegermann



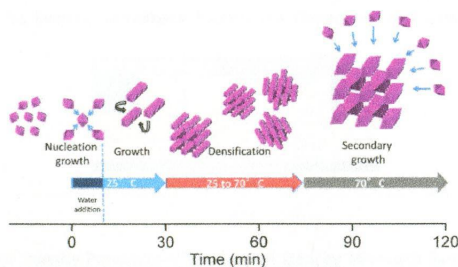
Mechanochemical Reaction Cascade for Sensitive Detection of Covalent Bond Breakage in Hydrogels

Kirsten R. Fitch and Andrew P. Goodwin\*



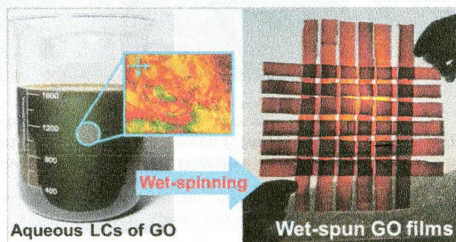
### Mechanisms of SnO<sub>2</sub> Nanoparticles Formation and Growth in Acid Ethanol Solution Derived from SAXS and Combined Raman–XAS Time-Resolved Studies

Bruno L. Caetano,\* Florian Meneau,\* Celso V. Santilli, Sandra H. Pulcinelli, Marina Magnani, and Valérie Briois



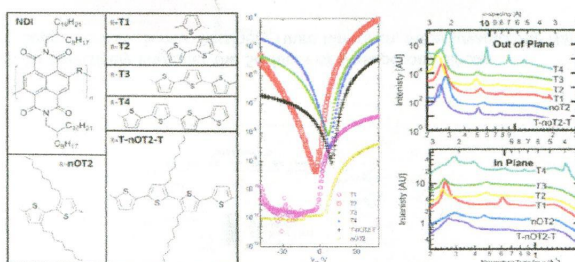
### Wet-Spun Continuous Graphene Films

Zheng Liu, Zheng Li, Zhen Xu, Zhixiang Xia, Xiaozhen Hu, Liang Kou, Li Peng, Yangyang Wei, and Chao Gao\*



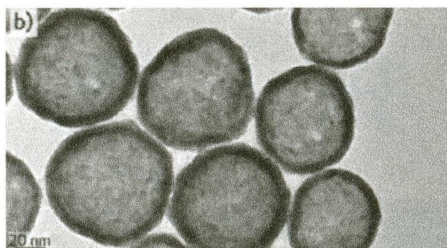
### Structure Influence on Charge Transport in Naphthalenediimide–Thiophene Copolymers

Monika M. Szumilo,\* Eliot H. Gann, Christopher R. McNeill, Vincent Lemaux, Yoann Oliver, Lars Thomsen, Yana Vaynzof, Michael Sommer, and Henning Sirringhaus\*



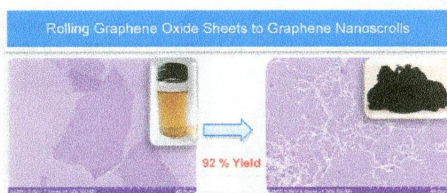
### Key Factors Affecting the Reproducibility of Synthesis and Growth Mechanism of Near-Infrared Absorbing Hollow Gold Nanospheres

Staci Adams, Dalena Thai, Xiomara Mascona, Adam M. Schwartzberg,\* and Jin Z. Zhang\*



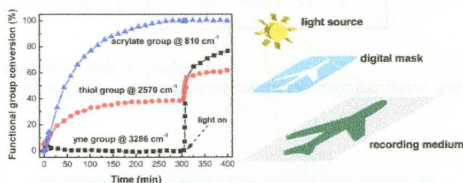
### Highly Efficient Synthesis of Neat Graphene Nanoscrolls from Graphene Oxide by Well-Controlled Lyophilization

Zhen Xu, Bingna Zheng, Jiewei Chen, and Chao Gao\*



### Facile Image Patterning via Sequential Thiol–Michael/Thiol–Yne Click Reactions

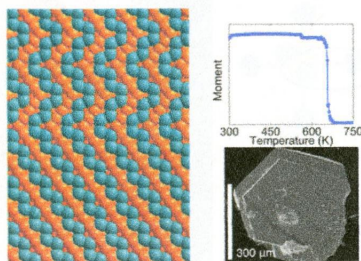
Haiyan Peng, Chen Wang, Weixian Xi, Benjamin A Kowalski, Tao Gong, Xiaolin Xie, Wentao Wang, Devatha P. Nair, Robert R. McLeod, and Christopher N. Bowman\*



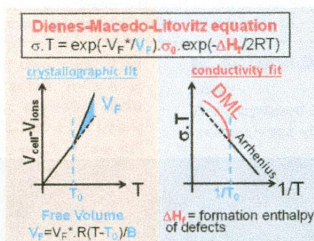


## Four High-Temperature Ferromagnets in the Hf–Fe–Sn System

Nicholas P. Calta, Melanie C. Francisco, Christos D. Malliakas, John A. Schlueter, and Mercouri G. Kanatzidis\*

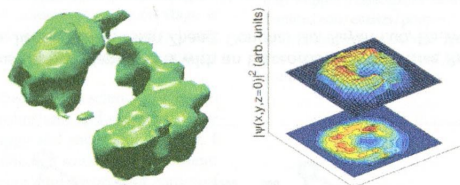
“Free” Volume Expansion and Formation Enthalpy of Defects as Key Parameters Tuning the Oxide Ionic Conductivity in Derivatives of  $\beta$ - $\text{La}_2\text{Mo}_2\text{O}_9$ 

Gwenaél Corbel,\* Ania Selmi, Emmanuelle Suard, and Philippe Lacorre



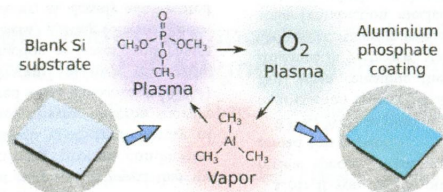
## Random-Alloying Induced Signatures in the Absorption Spectra of Colloidal Quantum Dots

Daniel Mourad,\* Antoine Guille, Tangi Aubert, Edouard Brainin, and Zeger Hens\*



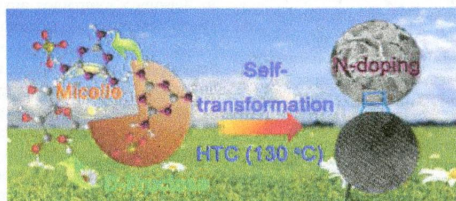
### Atomic Layer Deposition of Aluminum Phosphate Based on the Plasma Polymerization of Trimethyl Phosphate

Thomas Dobbelaere, Amit K. Roy, Philippe Vereecken, and Christophe Detavernier\*



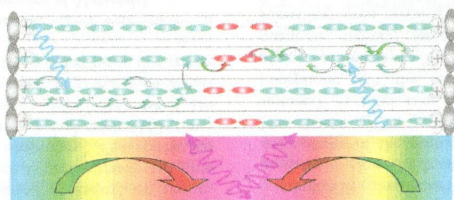
### Controlled Synthesis of Ordered Mesoporous Carbohydrate-Derived Carbons with Flower-like Structure and N-Doping by Self-Transformation

Shiping Wang, Chuanlong Han, Jing Wang, Jiang Deng, Minglei Zhu, Jia Yao, Haoran Li, and Yong Wang\*



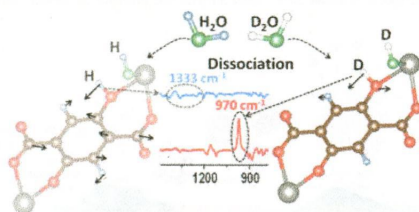
### Efficient and Robust Host–Guest Antenna Composite for Light Harvesting

André Devaux,\* Gion Calzaferri,\* Peter Belser,\* Pengpeng Cao, Dominik Brühwiler, and Andreas Kunzmann



**Water Reaction Mechanism in Metal Organic Frameworks with Coordinatively Unsaturated Metal Ions: MOF-74**

Kui Tan, Sebastian Zuluaga, Qihan Gong, Pieremanuele Canepa, Hao Wang, Jing Li, Yves J. Chabal,\* and Timo Thonhauser

**Oriented and Interlinked Porous Carbon Nanosheets with an Extraordinary Capacitive Performance**

Xiaoyu Zheng, Wei Lv, Ying Tao, Jiaojing Shao, Chen Zhang, Donghai Liu, Jiayan Luo, Da-Wei Wang,\* and Quan-Hong Yang\*

