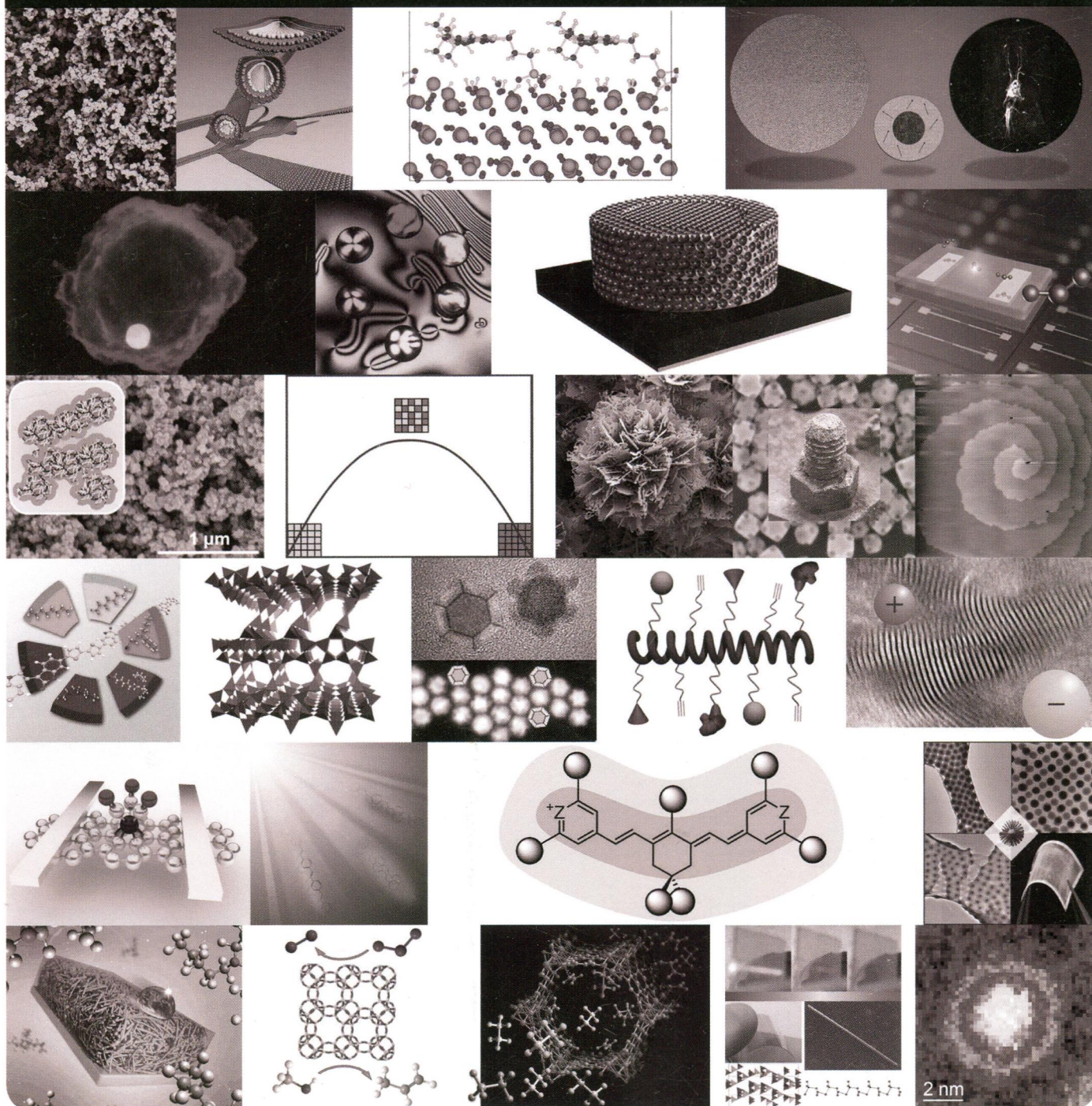


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SPECIAL ISSUE: CELEBRATING TWENTY-FIVE YEARS OF CHEMISTRY OF MATERIALS



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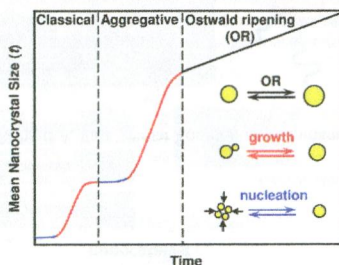
SPECIAL ISSUE: CELEBRATING TWENTY-FIVE YEARS OF CHEMISTRY OF MATERIALS

1 [dx.doi.org/10.1021/cm403964m](https://doi.org/10.1021/cm403964m)
25 Years of Proud History: Building for the Next 25
Jillian M. Buriak

3  [dx.doi.org/10.1021/cm4037988](https://doi.org/10.1021/cm4037988)
Celebrating Twenty-Five Years of *Chemistry of Materials*
Leonard V. Interrante* and Edwin A. Chandross

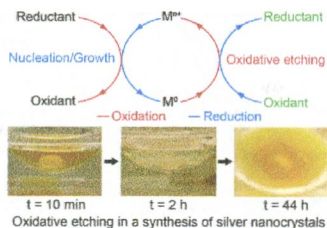
Nanoparticle Synthesis, Growth and Applications

5 [dx.doi.org/10.1021/cm402139r](https://doi.org/10.1021/cm402139r)
Kinetics and Mechanisms of Aggregative Nanocrystal Growth
Fudong Wang,* Vernal N. Richards, Shawn P. Shields, and William E. Buhro*



Oxidative Etching and Its Role in Manipulating the Nucleation and Growth of Noble-Metal Nanocrystals

Yiqun Zheng, Jie Zeng, Aleksey Ruditskiy, Maochang Liu, and Younan Xia*

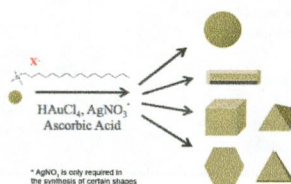


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dx.doi.org/10.1021/cm402384j

Anisotropic Noble Metal Nanocrystal Growth: The Role of Halides

Samuel E. Lohse, Nathan D. Burrows, Leonardo Scarabelli, Luis M. Liz-Marzán,* and Catherine J. Murphy*

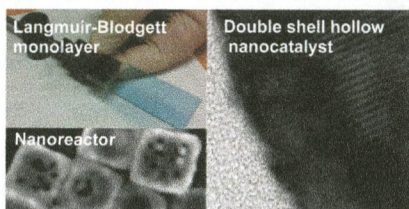


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dx.doi.org/10.1021/cm4020892

Hollow and Solid Metallic Nanoparticles in Sensing and in Nanocatalysis

Mahmoud A. Mahmoud, Daniel O'Neil, and Mostafa A. El-Sayed*

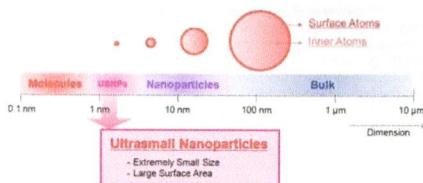


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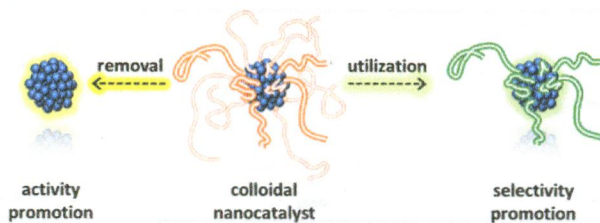
Synthesis, Characterization, and Application of Ultrasmall Nanoparticles

Byung Hyo Kim, Michael J. Hackett, Jongnam Park,* and Taeghwan Hyeon*

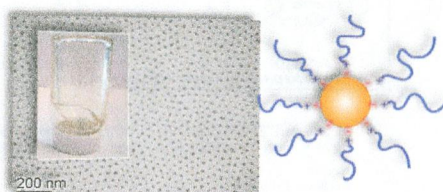


Removal and Utilization of Capping Agents in Nanocatalysis

Zhiqiang Niu and Yadong Li*

**Nanoscale Ionic Materials**

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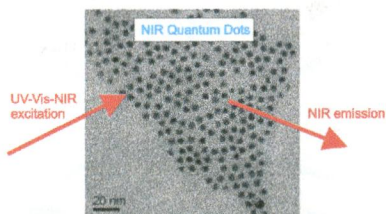
**Hybrid Semiconductor–Metal Nanoparticles: From Architecture to Function**

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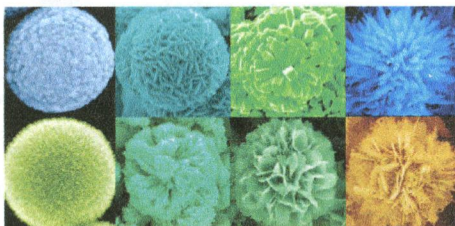
Near-Infrared Quantum Dots and Their Delicate Synthesis, Challenging Characterization, and Exciting Potential Applications

Frank C. J. M. van Veggel*



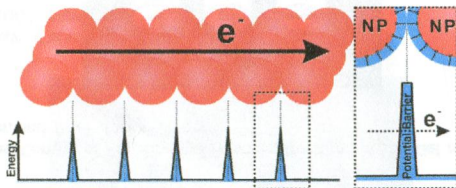
Hierarchical SnO₂ Nanostructures: Recent Advances in Design, Synthesis, and Applications

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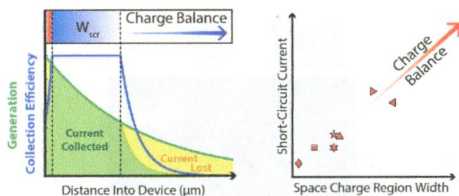
Charge Transport Dilemma of Solution-Processed Nanomaterials

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Postsynthetic Doping Control of Nanocrystal Thin Films: Balancing Space Charge to Improve Photovoltaic Efficiency

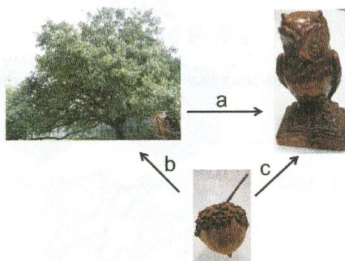
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Nanostructured Carbon Materials

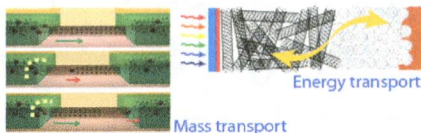
Top-Down versus Bottom-Up Fabrication of Graphene-Based Electronics

James M. Tour*



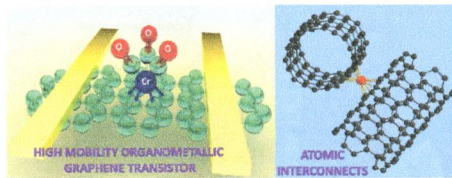
Low Dimensional Carbon Materials for Applications in Mass and Energy Transport

Qing Hua Wang, Darin O. Bellisario, Lee W. Drahushuk, Rishabh M. Jain, Sebastian Kruss, Markita P. Landry, Sayalee G. Mahajan, Steven F. E. Shimizu, Zachary W. Ulissi, and Michael S. Strano*



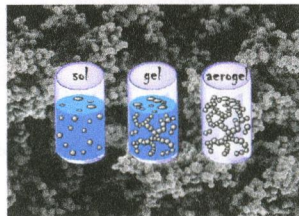
Metals on Graphene and Carbon Nanotube Surfaces: From Mobile Atoms to Atomtronics to Bulk Metals to Clusters and Catalysts

Santanu Sarkar, Matthew L. Moser, Xiaojuan Tian, Xixiang Zhang, Yas Fadel Al-Hadeethi, and Robert C. Haddon*



Carbon Aerogels and Monoliths: Control of Porosity and Nanoarchitecture via Sol–Gel routes

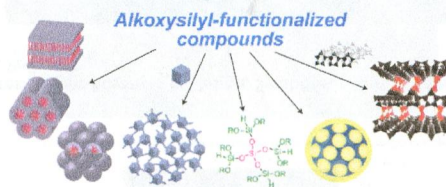
Markus Antonietti,* Nina Fechler, and Tim-Patrick Fellingner



Nanoporous Materials

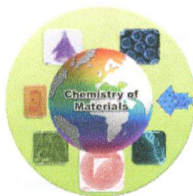
Utilization of Alkoxysilyl Groups for the Creation of Structurally Controlled Siloxane-Based Nanomaterials

Kazuyuki Kuroda,* Atsushi Shimojima,* Kazufumi Kawahara, Ryutaro Wakabayashi, Yasuhiro Tamura, Yusuke Asakura, and Masaki Kitahara



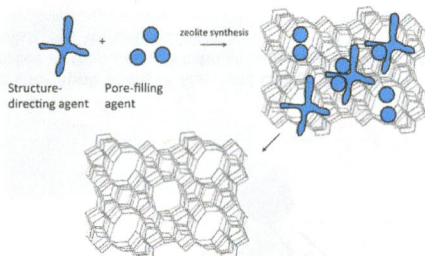
Molecular Engineering of Functional Inorganic and Hybrid Materials

C. Sanchez,* C. Boissiere, S. Cassaignon, C. Chaneac, O. Durupthy, M. Faustini, D. Grosso, C. Laberty-Robert, L. Nicole, D. Portehault, F. Ribot, L. Rozes, and C. Sasseoye



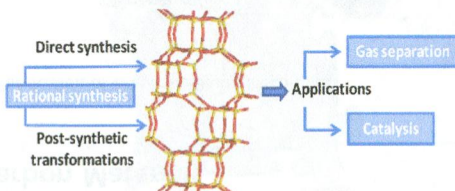
Zeolites from a Materials Chemistry Perspective

Mark E. Davis*



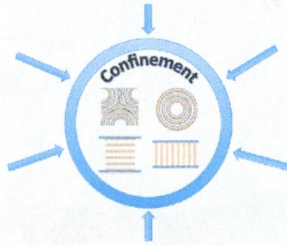
Synthesis Strategies for Preparing Useful Small Pore Zeolites and Zeotypes for Gas Separations and Catalysis

Manuel Moliner, Cristina Martinez, and Avelino Corma*



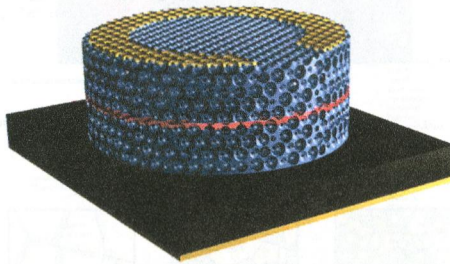
Perspective on the Influence of Interactions Between Hard and Soft Templates and Precursors on Morphology of Hierarchically Structured Porous Materials

Andreas Stein,* Stephen G. Rudisill, and Nicholas D. Petkovich



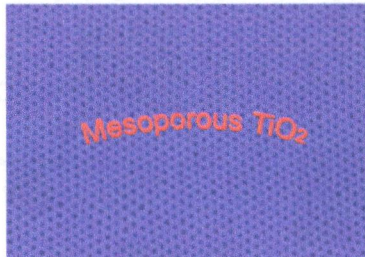
Materials Chemistry in 3D Templates for Functional Photonics

Paul V. Braun*



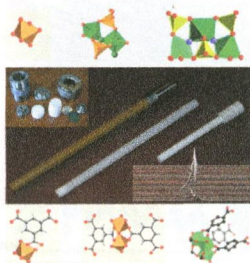
A Perspective on Mesoporous TiO₂ Materials

Wei Li, Zhangxiong Wu, Jinxiu Wang, Ahmed A. Elzatahry, and Dongyuan Zhao*



Nanoporous Solids: How Do They Form? An In Situ Approach

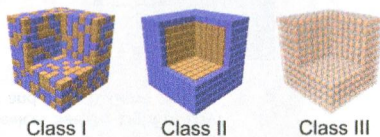
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Functional Hybrid Porous Coordination Polymers

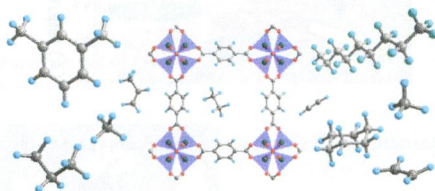
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Hybrid PCPs



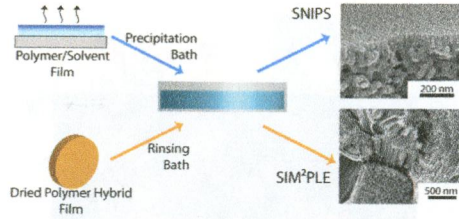
Hydrocarbon Separations in Metal–Organic Frameworks

Zoey R. Herm, Eric D. Bloch, and Jeffrey R. Long*



Hierarchically Porous Materials from Block Copolymers

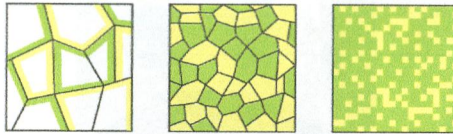
Rachel Mika Dorin, Hiroaki Sai, and Ulrich Wiesner*



Energy Storage and Conversion

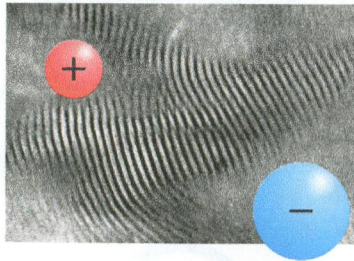
Pushing Nanoionics to the Limits: Charge Carrier Chemistry in Extremely Small Systems

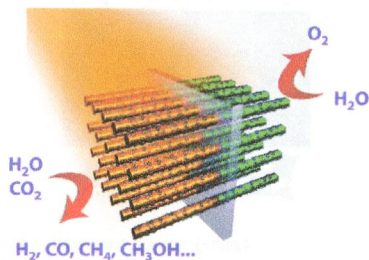
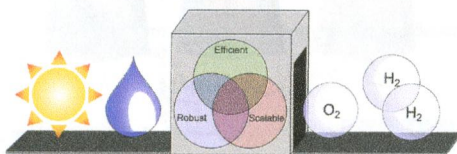
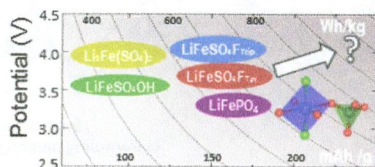
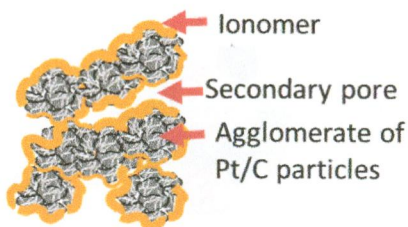
Joachim Maier*



Ion Conducting Membranes for Fuel Cells and other Electrochemical Devices

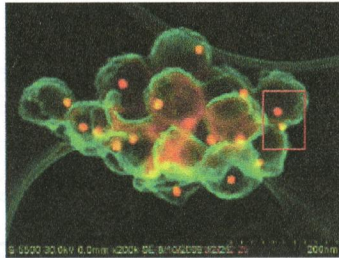
Klaus-Dieter Kreuer*





Encapsulation Strategies in Energy Conversion Materials

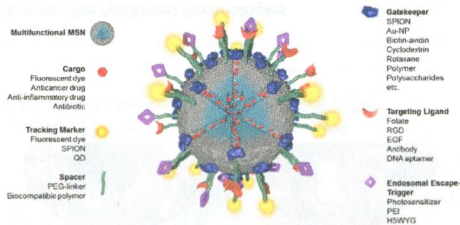
Ferdinand Schüth*



Materials Chemistry in Medicine and Biology

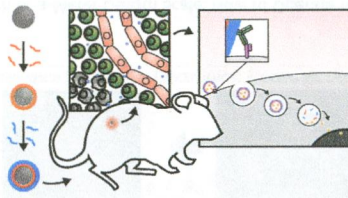
Multifunctional Mesoporous Silica Nanoparticles as a Universal Platform for Drug Delivery

Christian Argyo, Veronika Weiss, Christoph Bräuchle,* and Thomas Bein*



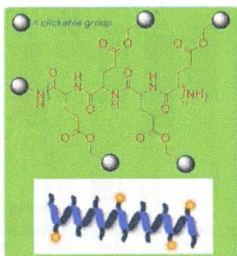
Assembly of Layer-by-Layer Particles and Their Interactions with Biological Systems

Yan Yan, Mattias Björnalm, and Frank Caruso*

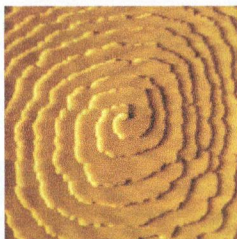


Clickable Synthetic Polypeptides—Routes to New Highly Adaptive Biomaterials

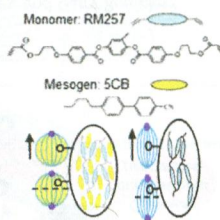
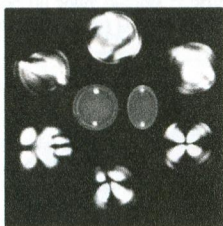
Mohiuddin A. Quadir, Mackenzie Martin, and Paula T. Hammond*

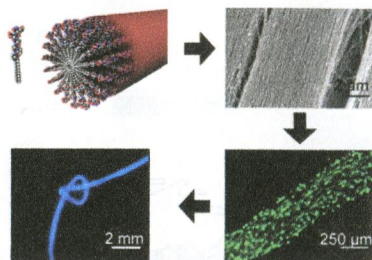
**The Materials Science of Pathological Crystals**

Laura N. Poloni and Michael D. Ward*

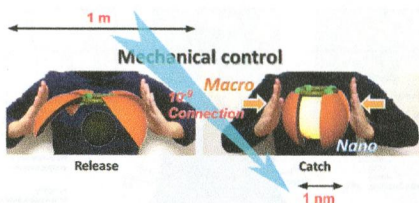
**Organic Materials in Electronics and Photonics****Design of Functional Materials Based on Liquid Crystalline Droplets**

Daniel S. Miller, Xiaoguang Wang, and Nicholas L. Abbott*

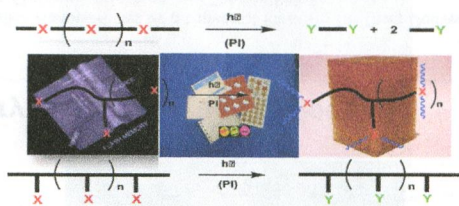




Katsuhiko Ariga,* Taizo Mori, Shinsuke Ishihara, Kohsaku Kawakami, and Jonathan P. Hill

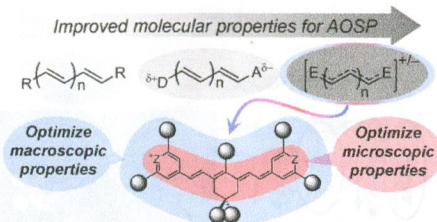


James V. Crivello and Elsa Reichmanis*



Design of Organic Chromophores for All-Optical Signal Processing Applications

Joel M. Hales,* Stephen Barlow, Hyeongeun Kim, Sukrit Mukhopadhyay, Jean-Luc Brédas, Joseph W. Perry,* and Seth R. Marder*



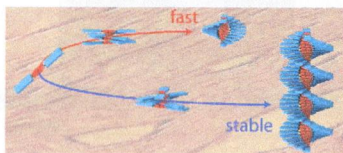
Charge Photogeneration in Neat Conjugated Polymers

Obadiah G. Reid, Ryan D. Pensack, Yin Song, Gregory D. Scholes, and Garry Rumbles*



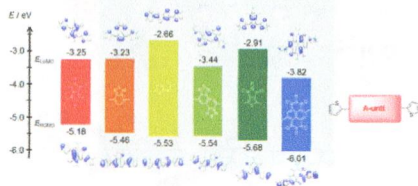
Pathway Complexity in π -Conjugated Materials

Peter A. Korevaar, Tom F. A. de Greef, and E. W. Meijer*



π -Building Blocks for Organic Electronics: Reevaluation of "Inductive" and "Resonance" Effects of π -Electron Deficient Units

Kazuo Takimiya,* Itaru Osaka,* and Masahiro Nakano



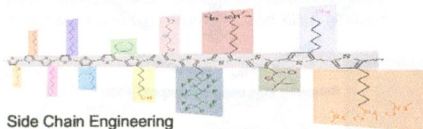
Roles of Flexible Chains in Organic Semiconducting Materials

Ting Lei, Jie-Yu Wang,* and Jian Pei*



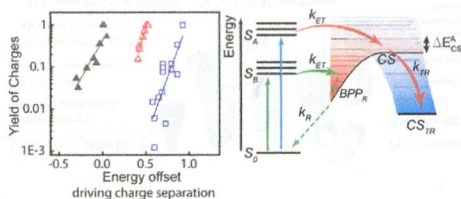
Side Chain Engineering in Solution-Processable Conjugated Polymers

Jianguo Mei and Zhenan Bao*



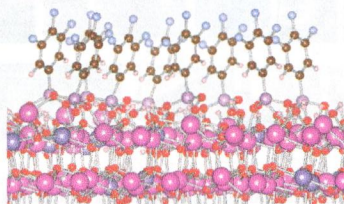
Materials Design Considerations for Charge Generation in Organic Solar Cells

Stoichko D. Dimitrov and James R. Durrant*



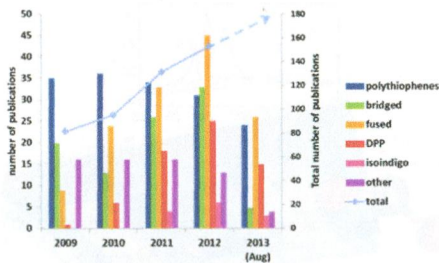
Transparent Conducting Oxides of Relevance to Organic Electronics: Electronic Structures of Their Interfaces with Organic Layers

Hong Li, Paul Winget, and Jean-Luc Brédas*



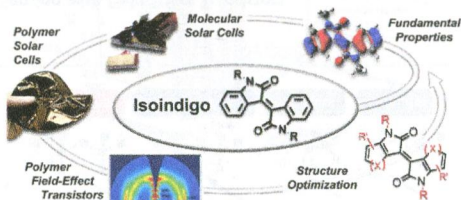
Advances in Charge Carrier Mobilities of Semiconducting Polymers Used in Organic Transistors

Sarah Holliday,* Jenny E. Donaghey,* and Iain McCulloch



Isoindigo, a Versatile Electron-Deficient Unit For High-Performance Organic Electronics

Romain Stalder, Jianguo Mei, Kenneth R. Graham, Leandro A. Estrada, and John R. Reynolds*



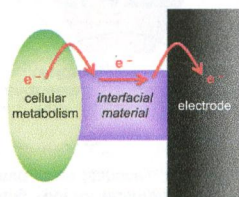
The Rise of Organic Bioelectronics

Jonathan Rivnay, Róisín M. Owens, and George G. Malliaras*



Modification of Abiotic–Biotic Interfaces with Small Molecules and Nanomaterials for Improved Bioelectronics

Jenny Du, Chelsea Catania, and Guillermo C. Bazan*

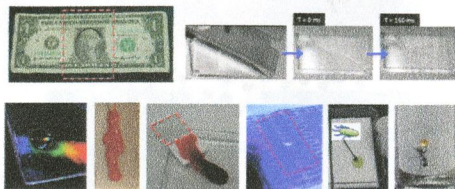


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dx.doi.org/10.1021/cm402364d

Mobile Interfaces: Liquids as a Perfect Structural Material for Multifunctional, Antifouling Surfaces

Alison Grinthal and Joanna Aizenberg*



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dx.doi.org/10.1021/cm402132y

From Chemical Solutions to Inorganic Nanostructured Materials: A Journey into Evaporation-Driven Processes

M. Faustini, C. Boissière, L. Nicole, and D. Grosso*

Chemical solution

- 1) Precursors
Solute to nanoparticles
- 2) Medium
Solvent, catalyser, etc.
- 3) Structuring agents
Molecules to hard object.
- 4) Evaporation conditions
Temperature, atmosphere.



- 5) Technical conditions
Method related

Processes

*Bottom-up
and/or
Top-Down*

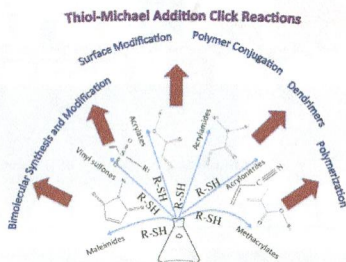
(coating,
fibre,
powder,
3D replicate,
foams,
patterns,
etc.)

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dx.doi.org/10.1021/cm402180t

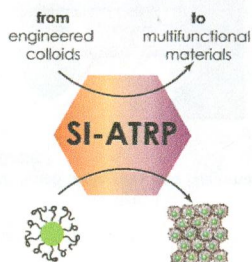
The Thiol-Michael Addition Click Reaction: A Powerful and Widely Used Tool in Materials Chemistry

Devatha P. Nair, Maciej Podgórski, Shunsuke Chatani, Tao Gong, Weixian Xi, Christopher R. Fenoli, and Christopher N. Bowman*



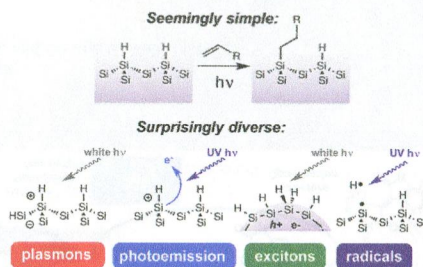
Surface-Initiated Polymerization as an Enabling Tool for Multifunctional (Nano-)Engineered Hybrid Materials

Chin Ming Hui, Joanna Pietrasik, Michael Schmitt, Clare Mahoney, Jihoon Choi, Michael R. Bockstaller,* and Krzysztof Matyjaszewski*



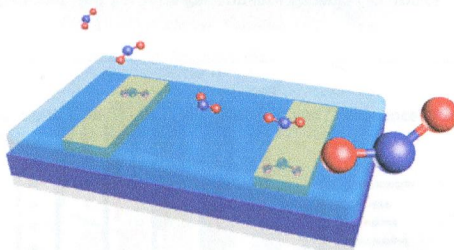
Illuminating Silicon Surface Hydrosilylation: An Unexpected Plurality of Mechanisms

Jillian M. Buriak*



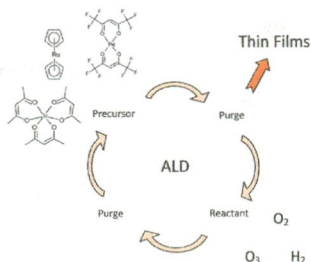
NO₂ Detection and Real-Time Sensing with Field-Effect Transistors

Anne-Marije Andringa, Claudia Piliago, Ilias Katsouras, Paul W. M. Blom, and Dago M. de Leeuw*



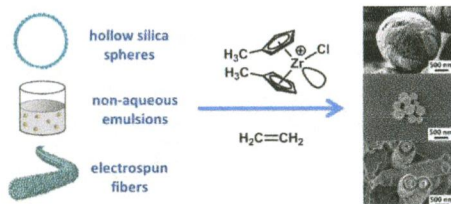
Atomic Layer Deposition of Noble Metals and Their Oxides

Jani Hämäläinen,* Mikko Ritala,* and Markku Leskelä*



Olefin Polymerization with Supported Catalysts as an Exercise in Nanotechnology

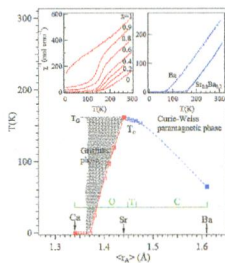
Markus Klapper,* Daejune Joe, Sven Nietzel, Joseph W. Krumpfer, and Klaus Müllen*



Inorganic Materials

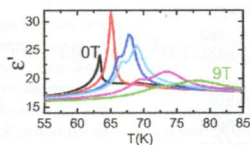
Perspective on Engineering Transition-Metal Oxides

John B. Goodenough*



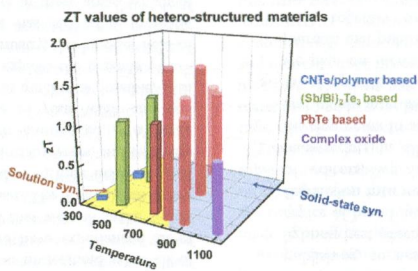
Multiferroics and Magnetoelectrics: A Comparison between Some Chromites and Cobaltites

K. R. S. Preethi Meher, C. Martin, V. Caignaert, F. Damay, and A. Maignan*



Heterostructured Approaches to Efficient Thermoelectric Materials

Yichi Zhang and Galen D. Stucky*



Metal Chalcogenides: A Rich Source of Nonlinear Optical Materials

In Chung and Mercuri G. Kanatzidis*

