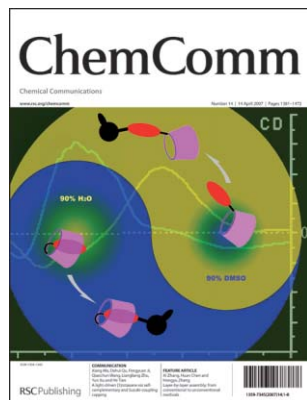


IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS (14) 1381-1472 (2007)



Cover

See He Tian *et al.*, page 1409. Azobenzene modified β -CD forms different conformations in 10% and 90% DMSO aqueous solution to prepare [1]rotaxane and its non-inclusion reference compound, respectively. Image reproduced by permission of Xiang Ma, Dahui Qu, Fengyuan Ji, Qiaochun Wang, Liangliang Zhu, Yun Xu and He Tian from *Chem. Commun.*, 2007, 1409.

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T25

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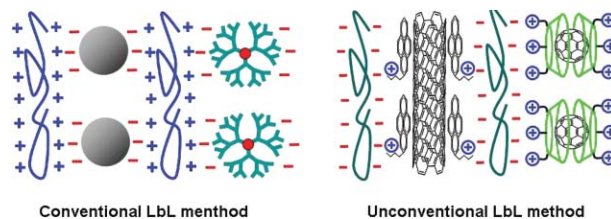
FEATURE ARTICLE

1395

Layer-by-layer assembly: from conventional to unconventional methods

Xi Zhang,* Huan Chen and Hongyu Zhang

Layer-by-layer (LbL) assembly is a powerful means for fabricating multilayer thin films with controlled architecture and composition. This feature article presents an overview of conventional and unconventional LbL methods, which allow for fabricating different types of building blocks in a designed way, leading to new horizons for surface molecular engineering.



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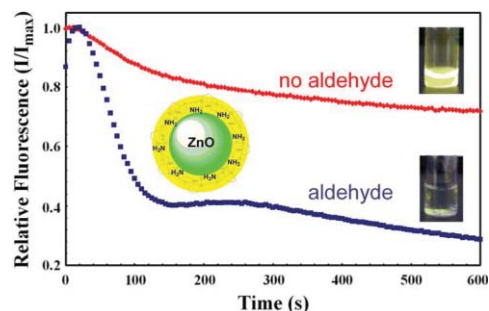
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1406

Controlled photostability of luminescent nanocrystalline ZnO solution for selective detection of aldehydes

Nikhil R. Jana, Hsiao-hua Yu, Emril Mohamed Ali, Yuangang Zheng and Jackie Y. Ying*

Water-soluble, silane-functionalized ZnO nanocrystals were synthesized with improved colloidal stability, and their photostability was controlled for the selective detection of aldehydes.

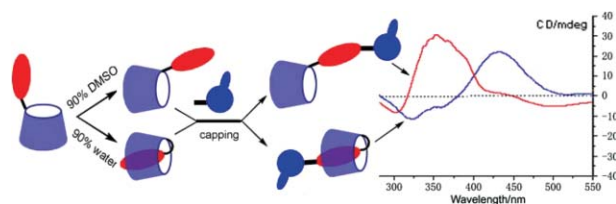


1409

A light-driven [1]rotaxane via self-complementary and Suzuki-coupling capping

Xiang Ma, Dahui Qu, Fengyuan Ji, Qiaochun Wang, Liangliang Zhu, Yun Xu and He Tian*

A light-driven [1]rotaxane was constructed conveniently and directly through self-inclusion complexation of an azobenzene-modified β -CD and Suzuki-coupling capping in an argon-saturated 10% DMSO Na_2CO_3 aqueous solution, while its non-inclusion reference compound was prepared in a 90% DMSO solution.

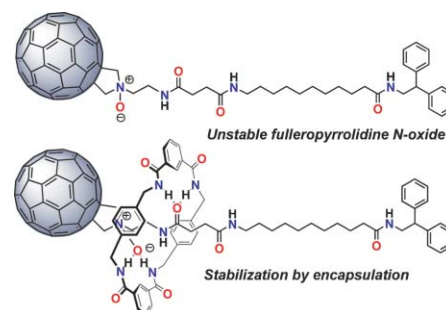


1412

Stabilization of fulleropyrrolidine *N*-oxides through intrarotaxane hydrogen bonding

Aurelio Mateo-Alonso,* Peter Brough and Maurizio Prato*

The chemical stabilization of labile fulleropyrrolidine *N*-oxides is achieved by encapsulation through intrarotaxane hydrogen bonding.

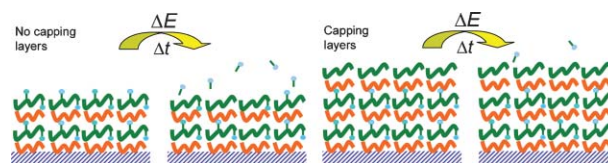


1415

Stimulated release of small molecules from polyelectrolyte multilayer nanocoatings

Yang Zhong, Catherine F. Whittington and Donald T. Haynie*

Free thiol-containing polyelectrolytes serve simultaneously as a material for self-assembly of a multilayer nanocoating and as a carrier of small molecules for release from the coating in response to an environmental cue.



Top tips for better chips



Chips & Tips is a new online resource from **Lab on a Chip**, discussing common problems encountered in the field of miniaturisation and microfabrication. Whether you want to learn the tricks of the trade or post your own tip, Chips & Tips is the place for you.

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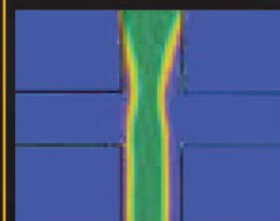
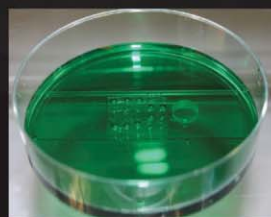
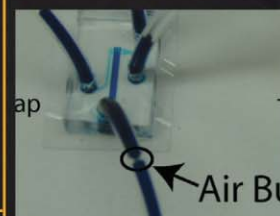
Richard J. Holmes and Nicholas J. Goddard

Vacuum filling of microfluidic devices, a simple method to remove bubbles when filling chips

Ivar Meyvantsson and David J. Beebe

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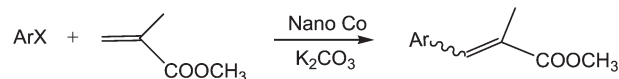
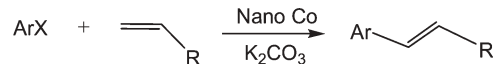
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1418

A novel Heck reaction catalyzed by Co hollow nanospheres in ligand-free condition

Ping Zhou, Yingguang Li, Peipei Sun,* Jiahong Zhou and Jianchun Bao*

Heck reaction catalysed by cobalt hollow nanospheres in ligand-free condition was developed; the coupling of alkenes with aryl iodide or aryl bromide provides the corresponding products with moderate to good yields.

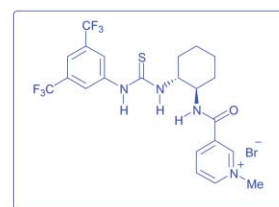
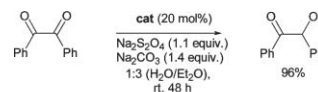


1421

A reductase-mimicking thiourea organocatalyst incorporating a covalently bound NADH analogue: efficient 1,2-diketone reduction with *in situ* prosthetic group generation and recycling

Barbara Procuranti and Stephen J. Connon*

The first organocatalytic system capable of both the activation and chemoselective reduction of benzil is described.

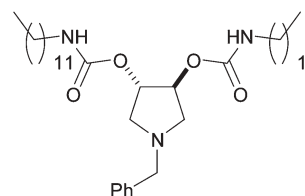


1424

A new organogelator based on an enantiopure C₂ symmetric pyrrolidine

Stefano Cicchi,* Giacomo Ghini, Luisa Lascialfari, Alberto Brandi, Francesca Betti, Debora Berti,* Silvia Ferrati and Piero Baglioni

The properties of a new organogelator and its use in the synthesis of new core-functionalised organogelators are described.

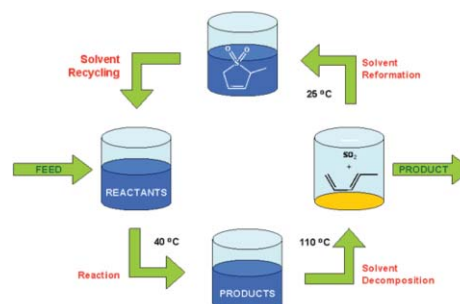


1427

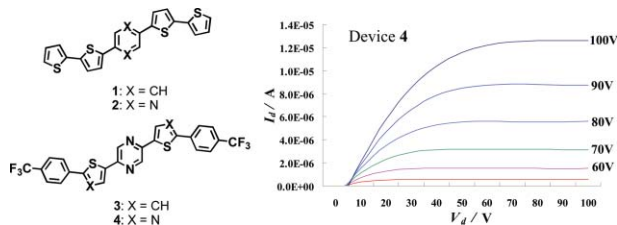
Piperylene sulfone: a labile and recyclable DMSO substitute

D. Vinci, M. Donaldson, J. P. Hallett, E. A. John, P. Pollet, C. A. Thomas, J. D. Grilly, P. G. Jessop, C. L. Liotta* and C. A. Eckert*

Piperylene sulfone has a wide liquid range and very similar properties to DMSO, but above about 100 °C it decomposes into two gases for product purification. These gases are removed and the solvent reconstituted for reuse. This novel solvent with “built-in” removal should have wide applications for fine chemical syntheses.



1430

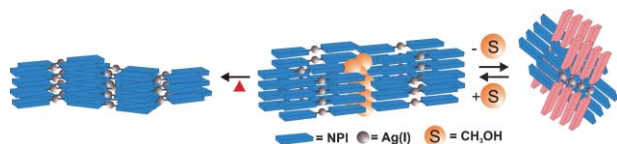


Organic field-effect transistors based on heterocyclic co-oligomers containing a pyrazine ring

Takahiro Kojima, Jun-ichi Nishida, Shizuo Tokito, Hirokazu Tada and Yoshiro Yamashita*

New oligomers containing a pyrazine unit have been prepared. The bithienyl derivatives afforded p-type FET devices whereas the trifluoromethylphenyl derivatives showed n-type FET behavior.

1433

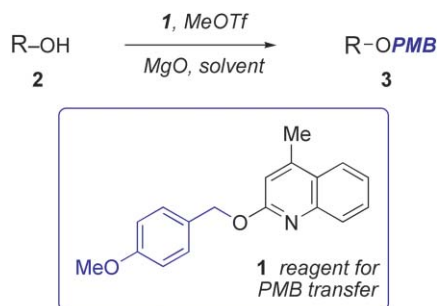


Single-crystal to single-crystal phase transitions of bis(*N*-phenylisonicotinamide)silver(I) nitrate reveal cooperativity properties in porous molecular materials

Partha S. Mukherjee, Nazario Lopez, Atta M. Arif, Francisco Cervantes-Lee and Juan C. Noveron*

The crystal structure of a silver complex that comprises solvent-filled pores of 8 Å undergoes two distinct single-crystal to single-crystal phase transitions induced by vacuum and heat.

1436

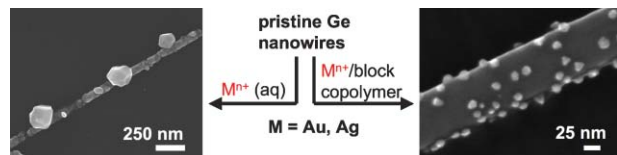


Synthesis of *para*-methoxybenzyl (PMB) ethers under neutral conditions

Ernest O. Nwoye and Gregory B. Dudley*

2-(4-Methoxybenzyloxy)-4-methylquinoline (**1**) reacts with methyl triflate in the presence of alcohols to generate a neutral organic salt that transfers the *p*-methoxybenzyl (PMB) protecting group onto alcohols in high yield. Quinoline **1** is prepared in one step from 2-chlorolepidine.

1438



Block copolymer mediated deposition of metal nanoparticles on germanium nanowires

Jiguang Zhang, Yuan Gao, Tobias Hanrath, Brian A. Korgel and Jillian M. Buriak*

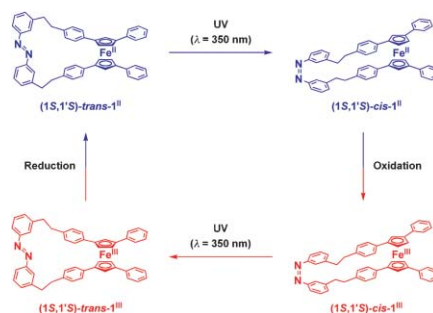
Single crystal germanium nanowires are functionalized with gold and silver nanoparticles *via* galvanic displacement. Through the use of block copolymers, regular and reproducible deposition can be achieved.

1441

Reversible operation of chiral molecular scissors by redox and UV light

Takahiro Muraoka, Kazushi Kinbara* and Takuzo Aida*

Upon changing the oxidation state, a reversible open–close motion of chiral molecular scissors, composed of a redox-active ferrocene pivot and an isomerizable azobenzene strap, can be realized only by UV light.

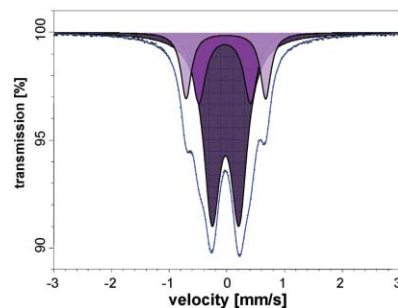


1444

⁵⁷Fe Mössbauer spectroscopy predicts superstructure for $K_{0.08}[Cu^{II}(N,N'app)Cl]_2[Fe^{III}(CN)_6] \cdot 0.92H_3O \cdot 3H_2O$

Uday Mukhopadhyay, C. Matthias Grunert, Joachim Kusz, Sergey Reiman, P. Gütllich* and Ivan Bernal*

The crystal structure of $K_{0.08}[Cu^{II}(N,N'app)Cl]_2[Fe^{III}(CN)_6] \cdot 0.92H_3O \cdot 3H_2O$, where $N,N'app$ is bis(N,N' -3-aminopropyl-piperazine), was determined by single crystal X-ray diffraction (CCD) at five temperatures. Its ⁵⁷Fe Mössbauer spectra showed three quadrupole doublets typical of Fe(III) low spin species which call for a superstructure, verified by the X-ray studies.

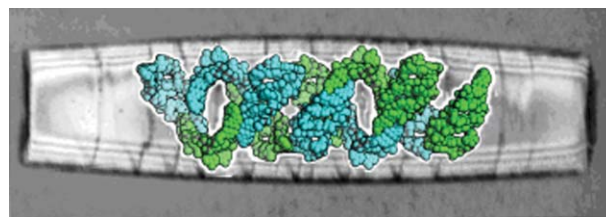


1447

A left-handed supramolecular assembly around a right-handed screw axis in the crystal structure of homo-DNA

Pradeep S. Pallan, Paolo Lubini and Martin Egli*

The crystal structure of homo-DNA ((4' → 6')-linked oligo(2',3'-dideoxy-β-D-glucopyranosyl)nucleotide) revealed formation of a left-handed superhelix with an underlying right-handed crystallographic symmetry, thus providing further demonstration of the versatility of nucleic acids as construction materials for supramolecular assemblies and an inspiration for crystal engineering.

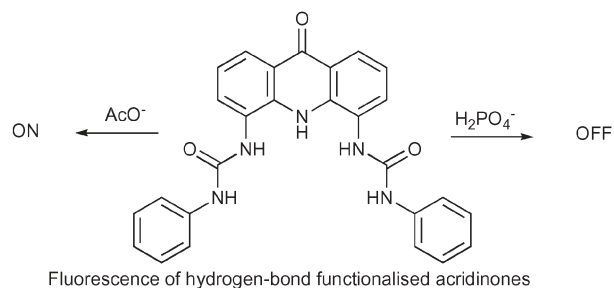


1450

Acridinone-based anion receptors and sensors

Sergio E. García-Garrido, Claudia Caltagirone, Mark E. Light and Philip A. Gale*

The interaction of a variety of acridinone derivatives containing hydrogen-bond donor groups in the 4- and 5-positions with anions demonstrate the potential of this new scaffold in anion receptor and sensor design.





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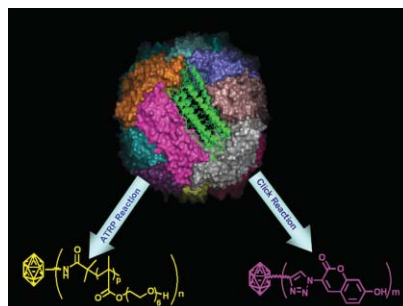
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1453

Chemoselective derivatization of a bionanoparticle by click reaction and ATRP reaction

Qingbing Zeng, Tao Li, Brandon Cash, Siqi Li, Fang Xie and Qian Wang*

Horse spleen apoferritin, a hollow bionanoparticle, can be chemoselectively modified to afford a robust scaffold for further chemical reactions, including Cu(I)-catalyzed azide-alkyne cycloaddition reaction and atom transfer radical polymerization reaction.

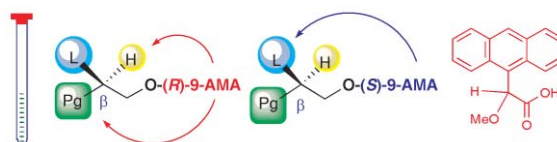


1456

Challenging the absence of observable hydrogens in the assignment of absolute configurations by NMR: application to chiral primary alcohols

Félix Freire, José Manuel Seco, Emilio Quiñoá and Ricardo Riguera*

A general NMR spectroscopy protocol for determination of absolute configuration of primary alcohols devoid of hydrogens at one of the two substituents is described.

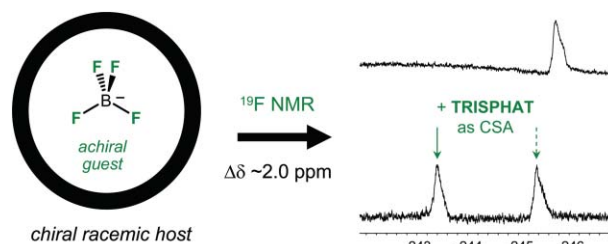


1459

Enantiodifferentiation of chiral cationic cages using trapped achiral BF_4^- anions as chirotopic probes

Richard Frantz, Christopher S. Grange, Nawal K. Al-Rasbi, Michael D. Ward* and Jérôme Lacour*

Addition of enantiopure TRISPHAT anions to chiral cationic cages (hosts) leads to the enantiodifferentiation of the ligands of the racemic salts and, even more effectively, of the entrapped achiral tetrafluoroborate anion (guest).

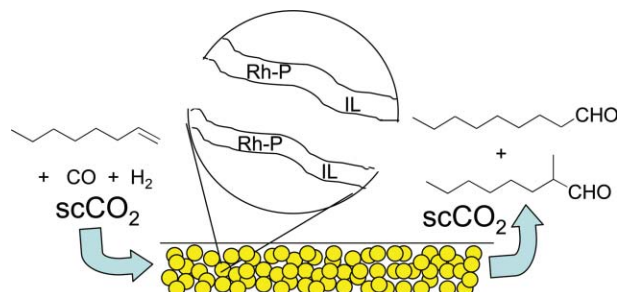


1462

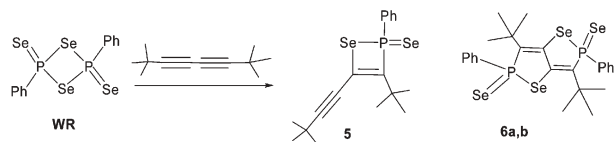
Supported ionic liquid phase catalysis with supercritical flow

Ulrich Hintermair, Guoying Zhao, Catherine C. Santini, Mark J. Muldoon and David J. Cole-Hamilton*

Rapid hydroformylation of 1-octene (rates up to 800 h^{-1}) with the catalyst remaining stable for at least 40 h and with very low rhodium leaching levels (0.5 ppm) is demonstrated when using a system involving flowing the substrate, reacting gases and products dissolved in scCO_2 over a fixed bed supported ionic liquid catalyst.



1465

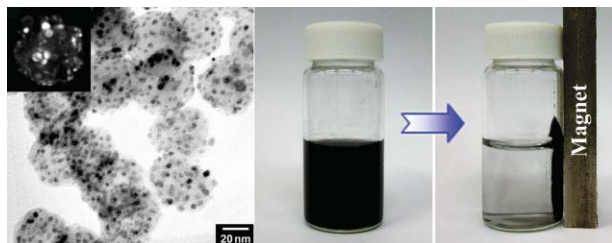


Unexpected four- and eight-membered organo P–Se heterocycles

Guoxiong Hua, Yang Li, Alexandra M. Z. Slawin and J. Derek Woollins*

New organo-phosphorus–selenium heterocycles have been prepared and characterised crystallographically.

1468



Nitrogen-doped magnetic carbon nanoparticles as catalyst supports for efficient recovery and recycling

Hyeonseok Yoon, Sungrok Ko and Jyongsik Jang*

Palladium nanoparticles were deposited with high dispersion and stability on nitrogen-doped magnetic carbon nanoparticles by a simple impregnation method, and their catalytic performance was investigated for Heck, Suzuki, and Sonogashira coupling reactions.

AUTHOR INDEX

- Aida, Takuzo, 1441
Ali, Emril Mohamed, 1406
Al-Rasbi, Nawal K., 1459
Arif, Atta M., 1433
Baglioni, Piero, 1424
Bao, Jianchun, 1418
Bernal, Ivan, 1444
Berti, Debora, 1424
Betti, Francesca, 1424
Brandi, Alberto, 1424
Brough, Peter, 1412
Buriak, Jillian M., 1438
Caltagirone, Claudia, 1450
Cash, Brandon, 1453
Cervantes-Lee, Francisco, 1433
Chen, Huan, 1395
Cicchi, Stefano, 1424
Cole-Hamilton, David J., 1462
Connon, Stephen J., 1421
Donaldson, M., 1427
Dudley, Gregory B., 1436
Eckert, C. A., 1427
Egli, Martin, 1447
Ferrati, Silvia, 1424
Frantz, Richard, 1459
Freire, Félix, 1456
Gale, Philip A., 1450
Gao, Yuan, 1438
García-Garrido, Sergio E., 1450
Ghini, Giacomo, 1424
Grange, Christopher S., 1459
Grilly, J. D., 1427
Grunert, C. Matthias, 1444
Gütlich, P., 1444
Hallett, J. P., 1427
Hanrath, Tobias, 1438
Haynie, Donald T., 1415
Hintermair, Ulrich, 1462
Hua, Guoxiong, 1465
Jana, Nikhil R., 1406
Jang, Jyongsik, 1468
Jessop, P. G., 1427
Ji, Fengyuan, 1409
John, E. A., 1427
Kinbara, Kazushi, 1441
Ko, Sungrok, 1468
Kojima, Takahiro, 1430
Korgel, Brian A., 1438
Kusz, Joachim, 1444
Lacour, Jérôme, 1459
Lascialfari, Luisa, 1424
Li, Siqi, 1453
Li, Tao, 1453
Li, Yang, 1465
Li, Yingguang, 1418
Light, Mark E., 1450
Liotta, C. L., 1427
Lopez, Nazario, 1433
Lubini, Paolo, 1447
Ma, Xiang, 1409
Mateo-Alonso, Aurelio, 1412
Mukherjee, Partha S., 1433
Mukhopadhyay, Uday, 1444
Muldoon, Mark J., 1462
Muraoka, Takahiro, 1441
Nishida, Jun-ichi, 1430
Noveron, Juan C., 1433
Nwoye, Ernest O., 1436
Pallan, Pradeep S., 1447
Pollet, P., 1427
Prato, Maurizio, 1412
Procuranti, Barbara, 1421
Qu, Dahui, 1409
Quiñoá, Emilio, 1456
Reiman, Sergey, 1444
Riguera, Ricardo, 1456
Santini, Catherine C., 1462
Seco, José Manuel, 1456
Slawin, Alexandra M. Z., 1465
Sun, Peipei, 1418
Tada, Hirokazu, 1430
Thomas, C. A., 1427
Tian, He, 1409
Tokito, Shizuo, 1430
Vinci, D., 1427
Wang, Qian, 1453
Wang, Qiaochun, 1409
Ward, Michael D., 1459
Whittington, Catherine F., 1415
Woollins, J. Derek, 1465
Xie, Fang, 1453
Xu, Yun, 1409
Yamashita, Yoshiro, 1430
Ying, Jackie Y., 1406
Yoon, Hyeonseok, 1468
Yu, Hsiao-hua, 1406
Zeng, Qingbing, 1453
Zhang, Hongyu, 1395
Zhang, Jiguang, 1438
Zhang, Xi, 1395
Zhao, Guoying, 1462
Zheng, Yuangang, 1406
Zhong, Yang, 1415
Zhou, Jiahong, 1418
Zhou, Ping, 1418
Zhu, Liangliang, 1409

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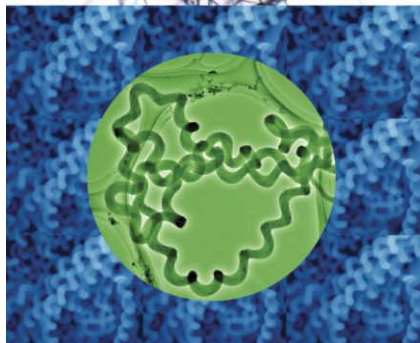
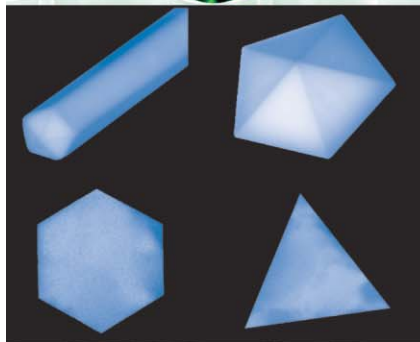
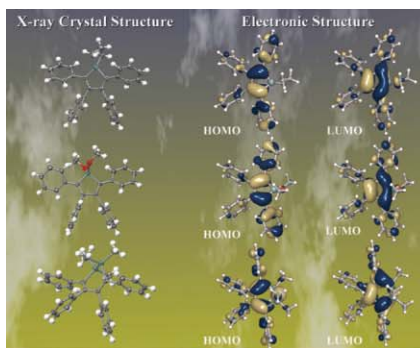
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