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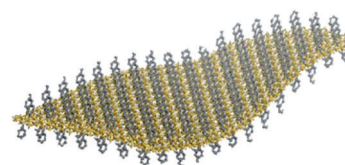


## Supramolecular Chemistry

H. Okamoto,\* Y. Sugiyama, H. Nakano\*

Synthesis and Modification of Silicon Nanosheets and Other Silicon Nanomaterials

**Peeling back the layers:** Developments in silicon nanomaterials will result in new fields that have not been reached by conventional bulk silicon semiconductors. In particular, silicon nanosheets are monolayers of silicon crystals with true atomic thickness that can be synthesized by soft chemistry (see figure).



*Chem. Eur. J.*  
DOI: [10.1002/chem.201100641](https://doi.org/10.1002/chem.201100641)

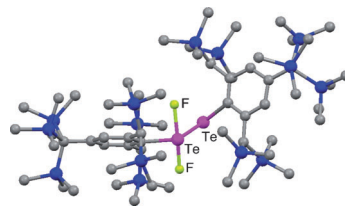


## Mixed-Valence Compounds

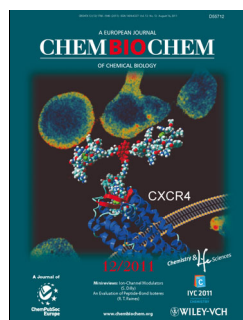
K. Sugamata, T. Sasamori,\* N. Tokitoh\*

Fluorination Reaction of a Ditelluride Bearing Bulky Aryl Substituents: Formation of Mixed-Valent  $\text{Te}^{\text{IV}}\text{--Te}^{\text{II}}$  Ditelluride Difluoride

**Te for two:** Fluorination reaction of a ditelluride bearing bulky substituents resulted in the formation of a mixed-valent  $\text{Te}^{\text{IV}}\text{--Te}^{\text{II}}$  ditelluride difluoride derivative.



*Chem. Asian J.*  
DOI: [10.1002/asia.201100368](https://doi.org/10.1002/asia.201100368)

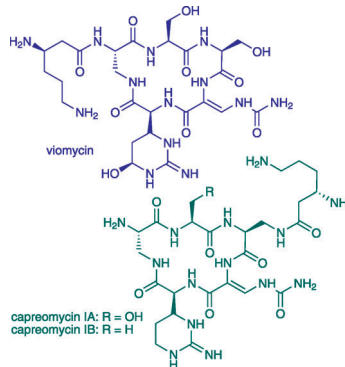


## Synthetases

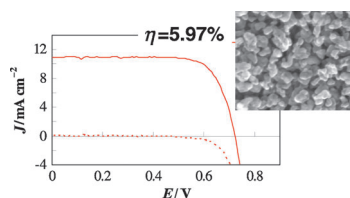
E. A. Felnagle, A. M. Podevels, J. J. Barkei, M. G. Thomas\*

Mechanistically Distinct Nonribosomal Peptide Synthetases Assemble the Structurally Related Antibiotics Viomycin and Capreomycin

**Tuberactinomycin biosynthesis:** Viomycin and capreomycin are structurally related antituberculosis drugs. Analysis of the nonribosomal peptide synthetases that assemble these molecules determined that peptide assembly occurs by distinct mechanisms. These unexpected differences provide insights into how modifications to homologous nonribosomal peptide synthetases can result in structure diversification.



*ChemBioChem*  
DOI: [10.1002/cbic.201100193](https://doi.org/10.1002/cbic.201100193)



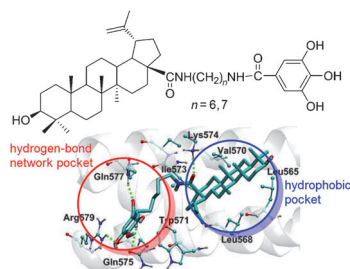
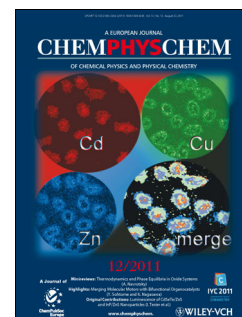
ChemPhysChem  
DOI: 10.1002/cphc.201100194

## Solar Cells

C. Magne, S. Cassaignon, G. Lancel, T. Pauporté\*

Brookite TiO<sub>2</sub> Nanoparticle Films for Dye-Sensitized Solar Cells

**Brookite-based solar cells:** Porous layers are prepared from brookite TiO<sub>2</sub> nanoparticles grown at low temperature by a soft solution synthetic method; these are sensitized and used to fabricate dye-sensitized solar cells. Particles with a crystallite size of 20 nm give rise to the best cells, reaching an overall conversion efficiency of about 6.0% without a scattering layer (see picture).



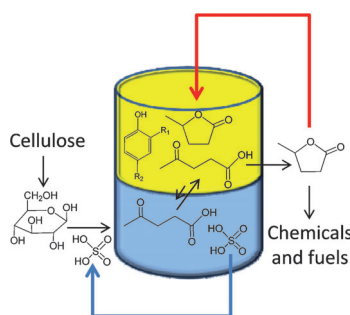
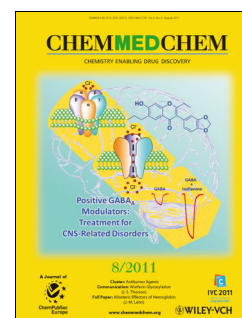
ChemMedChem  
DOI: 10.1002/cmdc.201100149

## Antiviral Agents

Y. Liu, Z. Ke, K. Y. Wu, S. Liu, W.-H. Chen, S. Jiang, Z.-H. Jiang\*

An Amphiphilic Conjugate Approach toward the Design and Synthesis of Betulinic Acid–Polyphenol Conjugates as Inhibitors of the HIV-1 gp41 Fusion Core Formation

**Stopping HIV in its tracks!** A series of betulinic acid–polyphenol conjugates were synthesized, with the aid of rational design by docking simulation, as novel HIV-1 fusion/entry inhibitors targeting gp41. These amphiphilic conjugates cooperatively interact with hydrophobic and hydrogen-bonding areas in the groove of the gp41 NHR trimeric coiled coil, demonstrating a promising strategy for the discovery of HIV-1 fusion/entry inhibitor binding to these two crucial pockets.



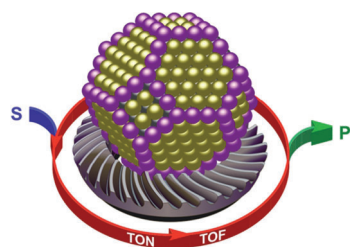
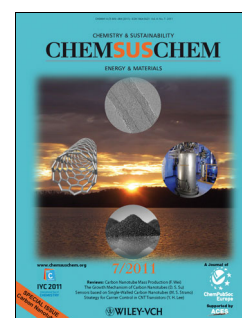
ChemSusChem  
DOI: 10.1002/cssc.201100256

## Biofuels

D. M. Alonso, S. G. Wettstein, J. Q. Bond, T. W. Root, J. A. Dumesic\*

Production of Biofuels from Cellulose and Corn Stover Using Alkylphenol Solvents

**Alkylphenol solvents** allow a more effective production of biofuels from corn stover by enabling selective extraction and hydrogenation of levulinic acid to  $\gamma$ -valerolactone, and by increasing the final concentration of GVL through successive extraction/hydrogenation steps. The versatility of alkylphenol solvents may lead to their use in other biomass conversion processes utilizing mineral acids for biomass deconstruction.



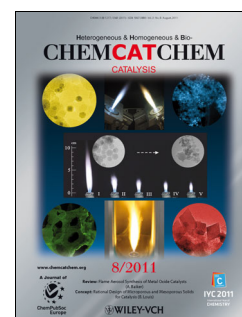
ChemCatChem  
DOI: 10.1002/cctc.201100159

## Nanoparticles

A. P. Umpierre, E. de Jesús, J. Dupont\*

Turnover Numbers and Soluble Metal Nanoparticles

**Defects beat faces:** It is proposed that, for soluble metal nanoparticles, ideally the turnover number (TON) is determined by using the titrated number of active catalytic sites. However, in the absence of reliable titration methods, the TON figures should be reported as the number of moles of reactants consumed per mol of soluble metal nanoparticle and the figures should also be corrected by the number of exposed surface atoms by using the metal atom's magic number approach.



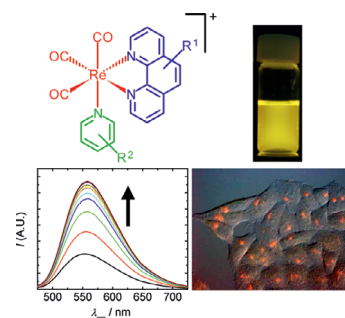


### Biomolecular and Cellular Probes

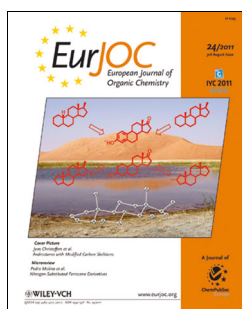
K. K.-W. Lo,\* K. Y. Zhang, S. P.-Y. Li

#### Recent Exploitation of Luminescent Rhenium(I) Tricarbonyl Polypyridine Complexes as Biomolecular and Cellular Probes

In this Microreview, we describe the fundamental emission characteristics of luminescent rhenium(I) tricarbonyl polypyridine complexes and explain why they hold promise for use as luminescent sensors. Additionally, we summarize the recent design of these complexes as biomolecular and cellular probes.



*Eur. J. Inorg. Chem.*  
DOI: 10.1002/ejic.201100469

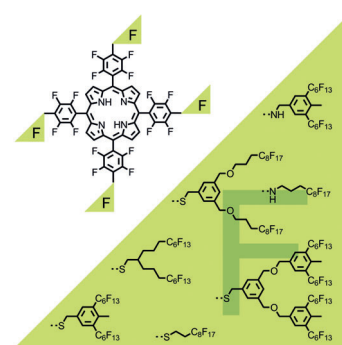


### Perfluoroalkylated Porphyrins

J. Tüxen, S. Eibenberger, S. Gerlich, M. Arndt, M. Mayor\*

#### Highly Fluorous Porphyrins as Model Compounds for Molecule Interferometry

Major contributions to the exploration of the frontiers of quantum mechanics are currently achieved by matter-wave interferometry with perfluoroalkyl-functionalized molecules. For this purpose a series of seven tailor-made fluoruous porphyrins was synthesized.



*Eur. J. Org. Chem.*  
DOI: 10.1002/ejoc.201100638

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