

# ChemComm

Chemical Communications

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## IN THIS ISSUE

ISSN 1359-7345 CODEN CHCOFS (33) 3457-3556 (2006)



### Cover

See Adrian Horgan *et al.*, page 3507.

Holograms can be engineered to change image or colour in response to different stimuli. Through modification of the polymer, holograms based on phenylboronic acids can be made selective towards glucose over other saccharides. Image reproduced by permission of Kathryn E. S. Dean, Adrian M. Horgan, Alexander J. Marshall, Satyamoorthy Kabilan and John Pritchard, *Chem. Commun.*, 2006, 3507.



### Inside cover

See Katherine E. Plass and Adam J. Matzger, page 3486.

The composition of a self-assembled monolayer formed from a multicomponent solution alters over time, but can be reversed by monolayer disruption. Image reproduced by permission of Katherine E. Plass and Adam J. Matzger from *Chem. Commun.*, 2006, 3486.

## NANOSCIENCE AT THE RSC

3473

Drawing together research highlights and news from all RSC publications, *Nanoscience at the RSC* provides a 'snapshot' of the latest developments in nanoscience and nanotechnology, showcasing newsworthy articles, upcoming theme issues, and recent book titles on this topic.

**Nanoscience at the RSC**

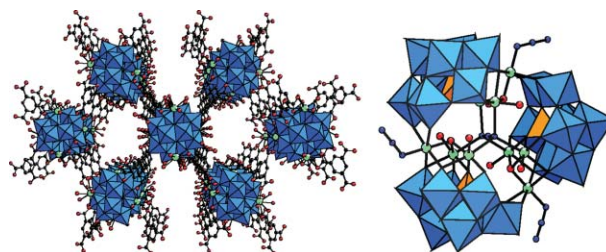
## FEATURE ARTICLE

3477

### Functionalization of polyoxometalates by carboxylato and azido ligands: macromolecular complexes and extended compounds

Pierre Mialane,\* Anne Dolbecq and Francis Sécheresse

Recent developments in the functionalization of polyoxometalates are presented. It is shown that the appropriate combination of rare earth or transition metal polyoxometalates and polydentate linkers allows the selective isolation of systems ranging from molecular compounds with unusual magnetic properties to 3D open-framework materials.



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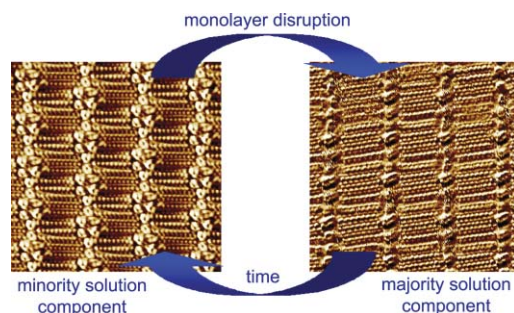
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### Spatial and temporal control over adsorption from multicomponent solutions

Katherine E. Plass and Adam J. Matzger\*

The composition of physisorbed monolayers formed from multicomponent solutions varies with time and selection between two phases is possible by controlled desorption of one phase and the kinetically favored adsorption of another.

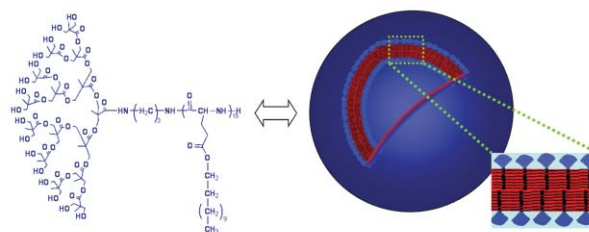


3489

### Vesicular self-assembly of comb-dendritic block copolymers

Lu Tian, Phuong Nguyen and Paula T. Hammond\*

New amphiphilic comb-dendritic block copolymers were developed as building blocks that self-assemble into stable vesicular structures with narrow size distribution.

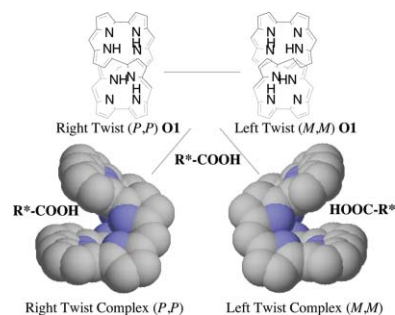


3492

### Direct determination of absolute configuration of carboxylic acids by cyclooctapyrrole

Juha M. Lintuluoto,\* Kana Nakayama and Jun-ichiro Setsune\*

Induced CD-spectra for the cyclic octapyrrole O1 which may be used to characterise the absolute configuration of a series of carboxylic acids.

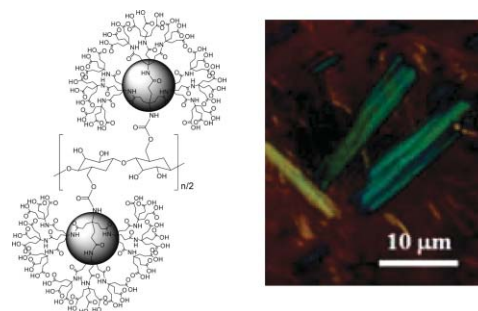


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### Construction of CdS quantum dots via a regioselective dendritic functionalized cellulose template

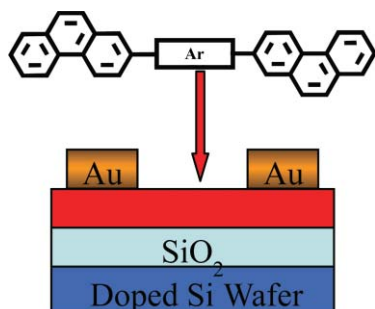
Seok-Ho Hwang, Charles N. Moorefield, Pingshan Wang, Kwang-Un Jeong, Stephen Z. D. Cheng, Kishore K. Kotta and George R. Newkome\*

Regioselectively dendronized cellulose provides the scaffolding for the formation of nanoscale CdS quantum dots. These functionalized polymers were observed to pack in orderly arrays and they exhibit photoluminescence.





3498

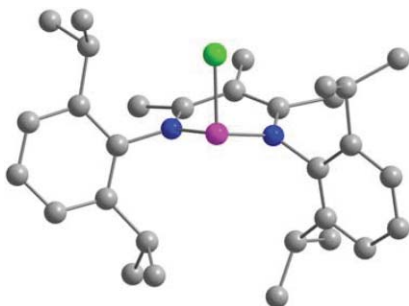


### Novel highly stable semiconductors based on phenanthrene for organic field-effect transistors

Hongkun Tian, Jianwu Shi, Shaoqiang Dong, Donghang Yan, Lixiang Wang, Yanhou Geng\* and Fosong Wang

Phenanthrene-based conjugated molecules are promising organic semiconductors for high-performance OFETs with excellent stability and high mobility.

3501

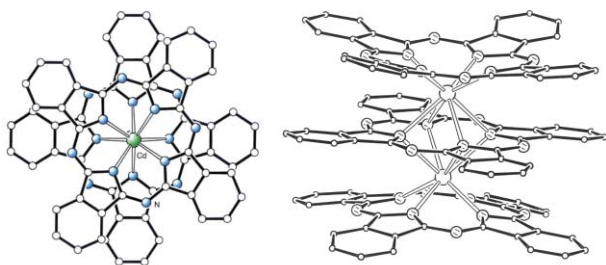


### An N,N'-chelated phosphonium cation supported by a $\beta$ -diketiminato ligand

Dragoslav Vidovic, Zheng Lu, Gregor Reeske, Jennifer A. Moore and Alan H. Cowley

The triflate salt of the first cyclic  $\beta$ -diketiminato-substituted phosphonium cation has been isolated and structurally characterized.

3504

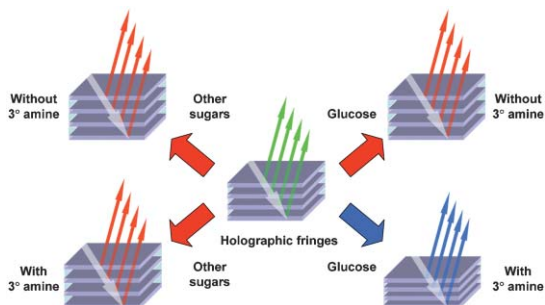


### First example of a di-cadmium tris-phthalocyanine triple-decker sandwich complex

Isabelle Chambrier, David L. Hughes, Jannie C. Swarts, Benjamin Isare and Michael J. Cook\*

An unprecedented  $M^{(II)}_2Pc_3$  phthalocyanine complex has been characterised by X-ray crystallography. Cyclic voltammetry and EPR spectroscopy indicate that the material exists in at least two redox states, one having spin  $1/2$ .

3507



### Selective holographic detection of glucose using tertiary amines

Kathryn E. S. Dean, Adrian M. Horgan, Alexander J. Marshall, Satyamoorthy Kabilan and John Pritchard\*

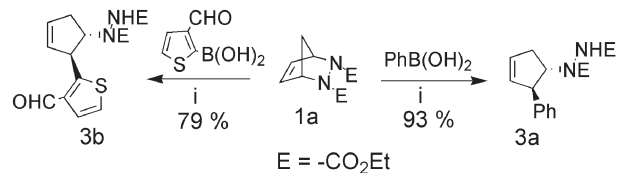
The introduction of tertiary amines into hydrogel polymers containing phenylboronic acid receptors leads to contraction and a decreased spacing between the holographic fringes in response to glucose, but for all other sugars there is hydrogel swelling and a red-shift in the wavelength of light reflected by the hologram.

3510

### Iodine assisted modified Suzuki type reaction of bicyclic hydrazines: stereoselective synthesis of functionalized cyclopentenes

Jubi John, V. S. Sajisha, Smitha Mohanlal and K. V. Radhakrishnan\*

Bicyclic hydrazines undergo a facile palladium/iodine mediated stereoselective ring opening on reaction with organoboron acids affording *trans*-3,4-disubstituted hydrazino cyclopentenes in good to excellent yield.



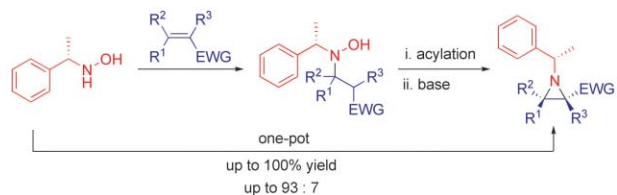
i = Pd(OAc)<sub>2</sub> (10 mol %), PPh<sub>3</sub> (20 mol %), I<sub>2</sub> (5 mol %), K<sub>2</sub>CO<sub>3</sub> (2.4 equiv.), THF/H<sub>2</sub>O (1:1)

3513

### Expedient synthesis of substituted (*S*)-*N*-( $\alpha$ -methylbenzyl)aziridines

Sean P. Bew,\* David L. Hughes, Vladimir Savic, Katy M. Soapi and Martin A. Wilson

The conjugate addition of (*S*)-*N*-( $\alpha$ -methylbenzyl)-hydroxylamine to activated carbon-carbon double bonds, followed by *O*-acylation of the conjugate addition product, affords after deprotonation optically active (*S*)-*N*-( $\alpha$ -methylbenzyl) substituted aziridines in good yield (up to 100%) and high diastereoselectivity.

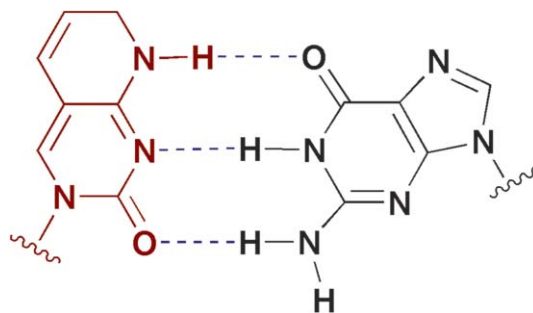


3516

### 7,8-Dihydropyrido[2,3-*d*]pyrimidin-2-one; a bicyclic cytosine analogue capable of enhanced stabilisation of DNA duplexes

Takayuki Shibata, Niklaas J. Buurma, John A. Brazier, Peter Thompson, Ihtshamul Haq and David M. Williams\*

The bicyclic cytosine analogue (shown) confers a remarkable stability on oligodeoxyribonucleotide duplexes ( $T_m$  increase of 3–4 °C per modification) in which it base pairs specifically with guanine.

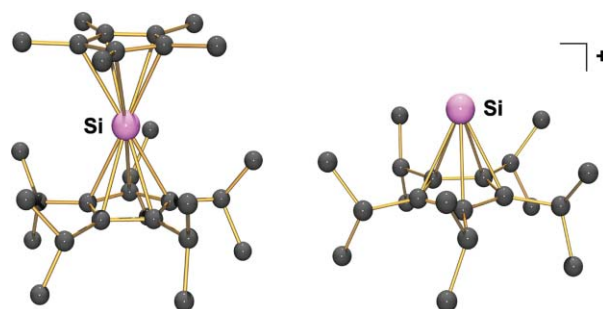


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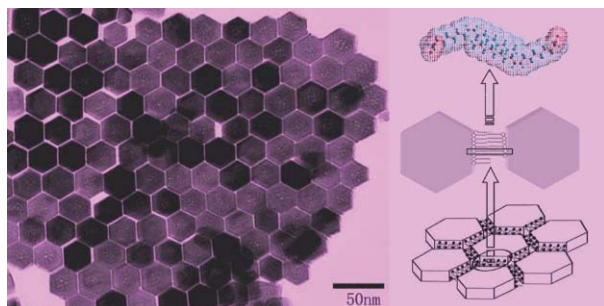
### Novel $\pi$ -complexes of divalent silicon: mixed substituted neutral sandwich compounds and the half-sandwich cation (<sup>i</sup>Pr<sub>5</sub>C<sub>5</sub>)Si<sup>+</sup>

Peter Jutzi,\* Andreas Mix, Beate Neumann, Britta Rummel and Hans-Georg Stammler

The pentamethylcyclopentadienylsilicon(II) cation, Me<sub>5</sub>C<sub>5</sub>Si<sup>+</sup>, opens up access to novel silicocene derivatives; the penta-*iso*-propylcyclopentadienylsilicon(II) cation, <sup>i</sup>Pr<sub>5</sub>C<sub>5</sub>Si<sup>+</sup>, is obtained by reaction of the mixed silicocene (<sup>i</sup>Pr<sub>5</sub>C<sub>5</sub>)(Me<sub>5</sub>C<sub>5</sub>)Si with H(OEt<sub>2</sub>)<sub>2</sub><sup>+</sup>Al[OCF(CF<sub>3</sub>)<sub>2</sub>]<sub>4</sub><sup>-</sup>.



3522

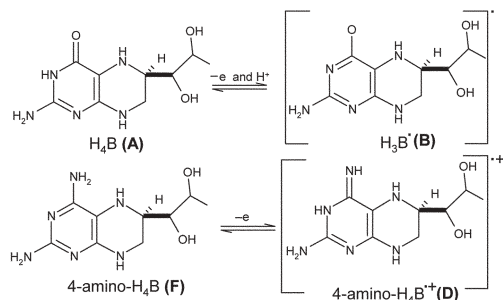


### Self-assembly of uniform hexagonal yttrium phosphate nanocrystals

Ziyang Huo, Chen Chen and Yadong Li\*

We describe a facile chemical route for the synthesis of uniform yttrium phosphate hydrate nanocrystals and their assembly into regular superstructures based on noncovalent interactions through overlap of long chain molecules.

3525

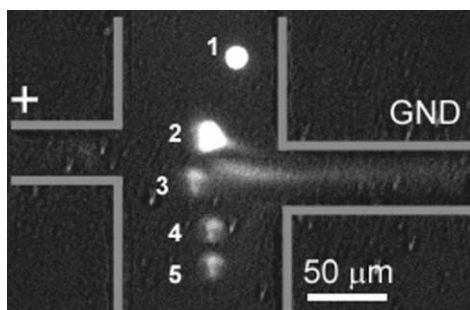


### The role of tetrahydrobiopterin in catalysis by nitric oxide synthase

Iñaki Morao, Ganga Periyasamy, Ian H. Hillier\* and John A. Joule

Calculations show that proton transfer accompanies electron transfer in H<sub>4</sub>B (A), but not in 4-amino-H<sub>4</sub>B (F).

3528

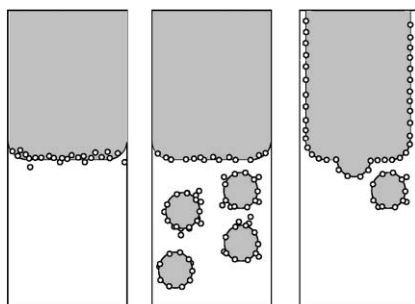


### Microfluidic chemical cytometry based on modulation of local field strength

Hsiang-Yu Wang and Chang Lu\*

A simple microfluidic device was demonstrated to analyze intracellular contents from single cells with high throughput based on having different field strengths in geometrically defined sections of a microchannel for electrical lysis and electrophoresis.

3531



### Particle film growth driven by foam bubble coalescence

Bernard P. Binks, John H. Clint, Paul D. I. Fletcher,\* Timothy J. G. Lees and Philip Taylor

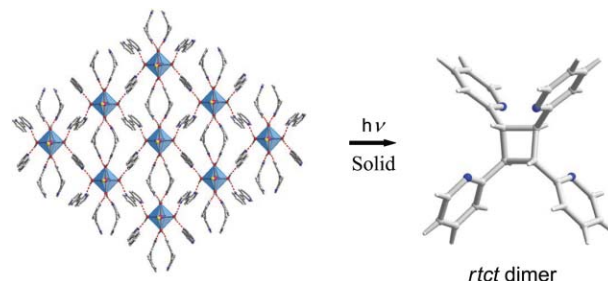
Water films stabilised by hydrophobic particles are found to spread rapidly up the inner walls of a glass vessel containing water and hydrophobic particles when it is shaken. Shaking produces unstable particle-stabilised foam bubbles whose coalescence with the air/water interface drives film growth up the inner walls of the container.

3534

**Supramolecular isomerism in multivalent metal-templated assemblies with topochemical influence in the regioselective synthesis of tetrakis(2-pyridyl)cyclobutane isomers**

Alexander Briceño,\* Dayana Leal, Reinaldo Atencio and Graciela Díaz de Delgado

An unprecedented example of supramolecular isomerism based on 2D hydrogen-bonded multi-component networks that leads to the preparation of different photoproducts *via* a topochemical transformation is reported.

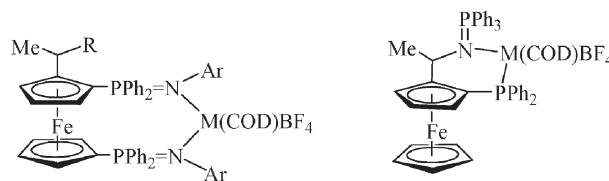


3537

**Chiral (iminophosphoranyl)ferrocenes: highly efficient ligands for rhodium- and iridium-catalyzed enantioselective hydrogenation of unfunctionalized olefins**

Thanh Thien Co and Tae-Jeong Kim\*

Cationic Rh- and Ir-complexes of the type  $[M(L)(COD)]BF_4$ , where L = (iminophosphoranyl)ferrocenes, are highly efficient catalysts for asymmetric hydrogenation of a series of unfunctionalized olefins to give enantiomeric excesses up to 99% ee.

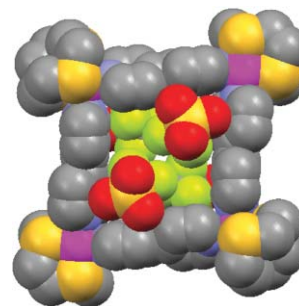


3540

**Synthesis and structure of a platinum(II) molecular square incorporating four fluxional thiacrown ligands: The crystal structure of  $[Pt_4([9]aneS_3)_4(4,4'-bipy)_4(OTf)_8]$**

Daron E. Janzen, Ketankumar N. Patel, Donald G. VanDerveer and Gregory J. Grant\*

A Pt(II) molecular square containing four fluxional trithiacrown ligands at the corners is prepared by transition metal-mediated self-assembly.

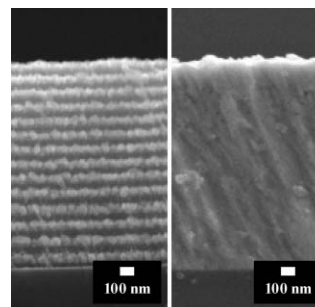


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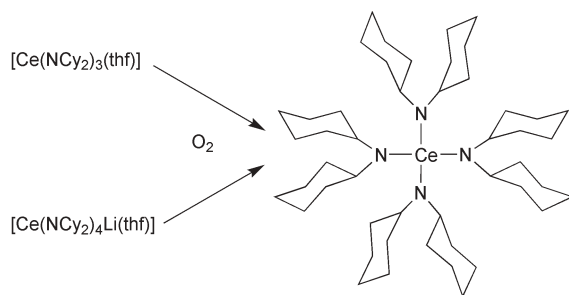
**Thin-film growth of low temperature lead antimony sulfide plagiionite phases**

Matthieu Y. Versavel and Joel A. Haber\*

Smooth and compact  $Pb_5Sb_8S_{17}$  and  $Pb_9Sb_8S_{21}$  thin films were synthesized *via* sulfurization of unique layered precursor films of amorphous (Sb,S) and crystalline PbS; our syntheses suggest that these plagiionite group phases are metastable and indicate that their formation does not require hydrogen incorporation.



3546

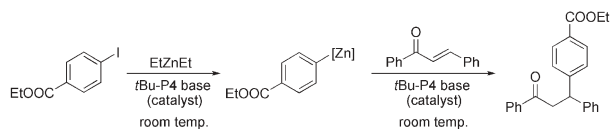


### Facile formation of a homoleptic Ce(IV) amide *via* aerobic oxidation

Peter B. Hitchcock, Michael F. Lappert\* and Andrey V. Protchenko\*

The first homoleptic Ce(IV) dialkylamide was prepared by the oxidation of Ce(III) amides with dry air.

3549

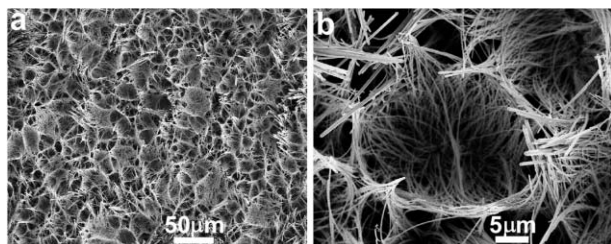


### Phosphazene base-promoted halogen–zinc exchange reaction of aryl iodides using diethylzinc

Masahiro Ueno, Andrew E. H. Wheatley and Yoshinori Kondo\*

The use of catalytic *t*-Bu-P4 base dramatically improved the performance of halogen–zinc exchange of aryl iodides, and the functionalization was achieved under copper-free reaction conditions.

3551



### Hydrothermal growth of large-scale micropatterned arrays of ultralong ZnO nanowires and nanobelts on zinc substrate

Conghua Lu, Limin Qi,\* Jinhua Yang, Li Tang, Dayong Zhang and Jiming Ma

Large-scale, ultralong ZnO nanowire and nanobelt arrays with honeycomb-like micropatterns have been fabricated by hydrothermal oxidation of zinc foil in aqueous alkaline  $(\text{NH}_4)_2\text{S}_2\text{O}_8$  solutions.



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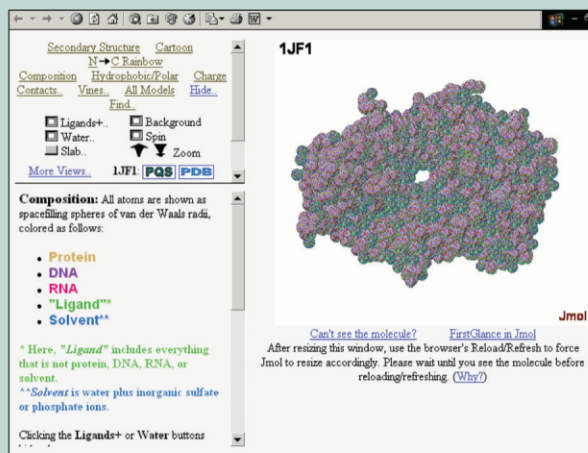
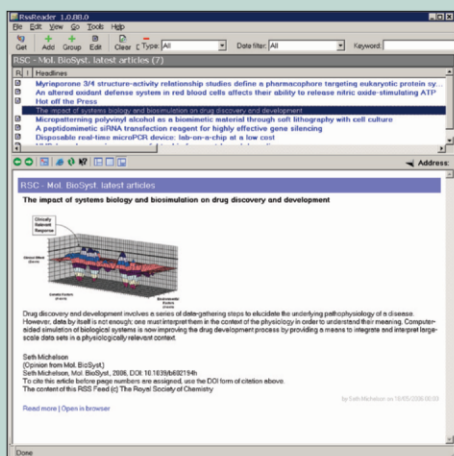
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