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Chemical Science – a ‘snapshot’ of the latest news and developments across the chemical sciences
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Cover

See Neralagatta M. Sangeetha and Uday Maitra, page 821.

The cover shows the brilliant texture of a low molecular mass gel seen under a polarizing optical microscope. Shown in the inset is a SEM of a xerogel revealing the gel morphology. The rod-like fibers are formed by spontaneous self-assembly of small molecules. Image reproduced by permission of Neralagatta M. Sangeetha and Uday Maitra, from *Chem. Soc. Rev.*, 2005, **34**, 821.

CHEMICAL SCIENCE

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Drawing together the research highlights and news from all RSC publications, Chemical Science provides a ‘snapshot’ of the latest developments across the *chemical sciences* showcasing newsworthy articles, as well as the most significant scientific advances.

Chemical Science

October 2005/Volume 2/Issue 10

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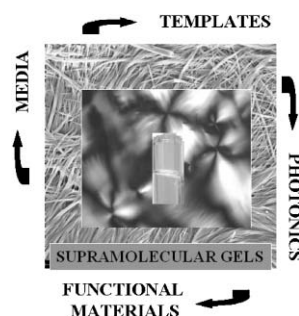
TUTORIAL REVIEWS

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Supramolecular gels: Functions and uses

Neralagatta M. Sangeetha and Uday Maitra*

Gels derived from low molecular mass gelators (supramolecular gels) have excited immense interest. These soft materials are thermoreversible and offer the possibility to manipulate their supramolecular architectures to customize them for specific functions. This tutorial review highlights some of the instructive work made by various groups to render these materials smart and functional to exploit them for various uses.



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Ru-based oxidation catalysis

Mario Pagliaro,* Sandro Campestrini* and Rosaria Ciriminna*

Fantastic Ru-mediated oxidations range from fast conversion of water to O₂ to powerful hydroxylation of olefins, oxidative dehydrogenation of alcohols and hydroxylation of hydrocarbons. Ruthenium, a co-product of platinum mined abundantly in Russia (*photo of Norilsk in the Kola Peninsula*) has a number of impressive catalytic properties.

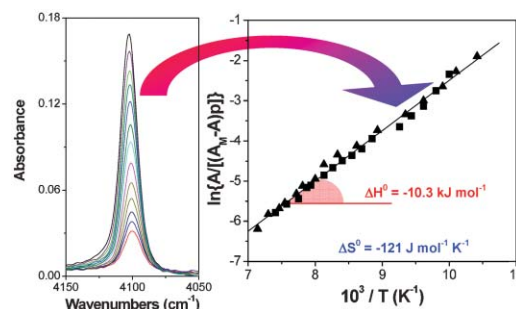


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Variable temperature infrared spectroscopy: A convenient tool for studying the thermodynamics of weak solid–gas interactions

Edoardo Garrone* and Carlos Otero Areán*

Thermodynamics at work: using IR spectra at variable temperature, even elusive processes like the interaction of dihydrogen with exchangeable zeolite cations, or the isomerization of adsorbed carbon monoxide complexes, can be thoroughly characterised.

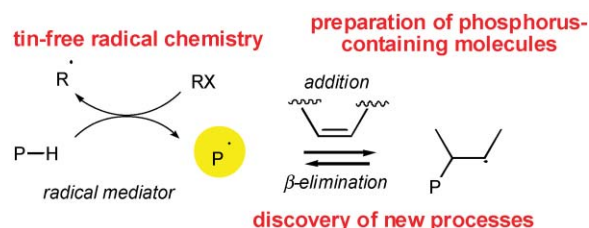


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Recent advances in the use of phosphorus-centered radicals in organic chemistry

Dominique Leca, Louis Fensterbank,* Emmanuel Lacôte* and Max Malacria*

Environment-friendly radical reactions involving phosphorus-centered radicals are central to organic chemistry. All synthetic aspects of the field are reviewed herein.

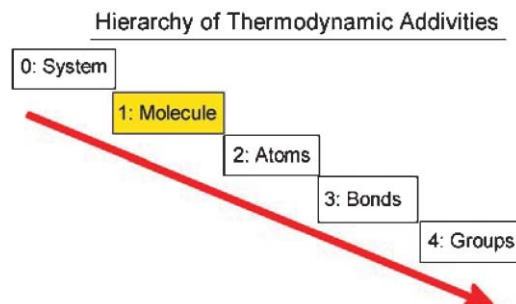


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**Predictive thermodynamics for condensed phases**

Leslie Glasser* and H. Donald Brooke Jenkins*

Predictive thermodynamics, and volume-based thermodynamics (VBT) in particular, provide a simple and ready means of producing otherwise unavailable thermodynamic data for synthetic routes and decomposition pathways and energetics.



$M(\alpha,\beta)-M(\gamma)$ 

Nucleoside 5'-triphosphates: self-association, acid-base, and metal ion-binding properties in solution


Helmut Sigel* and Rolf Griesser

The type of metal ion coordination to a triphosphate chain governs the fate of the resulting reaction. With this in mind the coordination chemistry of binary and ternary complexes involving nucleoside 5'-triphosphates and related nucleotides is critically reviewed and open questions are pointed out.

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