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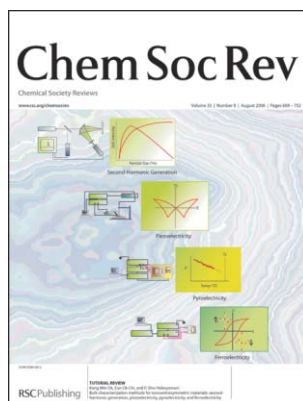
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ISSN 0306-0012 CODEN CSRVBR 35(8) 669–752 (2006)



Cover

See Barry K. Carpenter, page 736. Thermal generation of electronic excited states is easily recognised when the products are luminescent, as is the case for the two molecules shown on the left. The phenomenon can still occur, but is much harder to detect when no light is emitted, as is apparently the case for the two molecules on the right. What the luminescent and nonluminescent reactions have in common is a crossing of potential energy surfaces during the thermal reaction. Image reproduced by permission of Barry K. Carpenter, *Chem. Soc. Rev.*, 2006, **35**, 736.



Inside cover

See Kang Min Ok, Eun Ok Chi, and P. Shiv Halasyamani, page 710. Four 'acentric' properties, second-harmonic generation, piezoelectricity, pyroelectricity, and ferroelectricity, are described. A brief history of each phenomenon is given, along with data interpretation. Image reproduced by permission of Kang Min Ok, Eun Ok Chi, and P. Shiv Halasyamani, *Chem. Soc. Rev.*, 2006, **35**, 710.

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

August 2006/Volume 3/Issue 8

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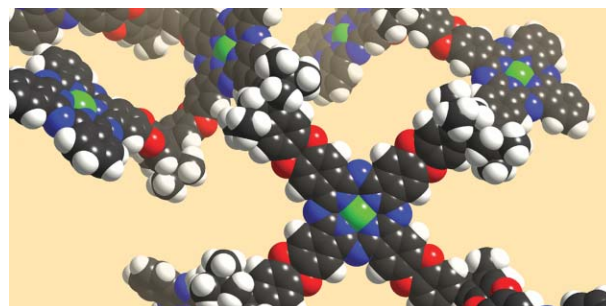
TUTORIAL REVIEWS

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Polymers of intrinsic microporosity (PIMs): organic materials for membrane separations, heterogeneous catalysis and hydrogen storage

Neil B. McKeown* and Peter M. Budd

This review describes Polymers of Intrinsic Microporosity (PIMs), which combine the desirable properties of both microporous materials and polymers.



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Chemical Society Reviews (print: ISSN 0306-0012; electronic: ISSN 1460-4744) is published 12 times a year by the Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, UK CB4 0WF.

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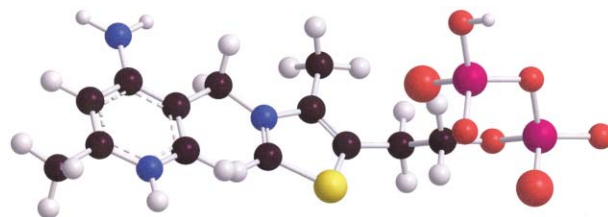
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Thiamine models and perspectives on the mechanism of action of thiamine-dependent enzymes

Gerasimos Malandrinou, Maria Louloudi* and Nick Hadjiliadis*

Chemical models for the active site of thiamine dependent reactions serve as useful tools to substantiate a detailed mechanism of action.

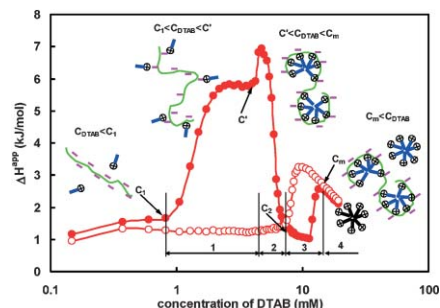


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Insights on polymer surfactant complex structures during the binding of surfactants to polymers as measured by equilibrium and structural techniques

Kam C. Tam and Evan Wyn-Jones

A review tutorial providing new insights on the polymer–surfactant interactions derived from experimental results of newer physical characterization techniques.

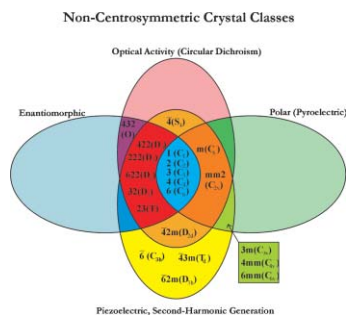


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Bulk characterization methods for non-centrosymmetric materials: second-harmonic generation, piezoelectricity, pyroelectricity, and ferroelectricity

Kang Min Ok, Eun Ok Chi and P. Shiv Halasyamani*

Characterization methods for bulk non-centrosymmetric compounds are described. These methods include second-harmonic generation, piezoelectricity, pyroelectricity, and ferroelectricity. With each phenomenon, details are given of the measurement techniques along with a brief history and background. Finally, data interpretation is discussed.

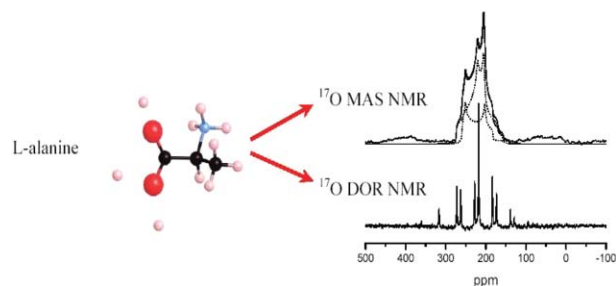


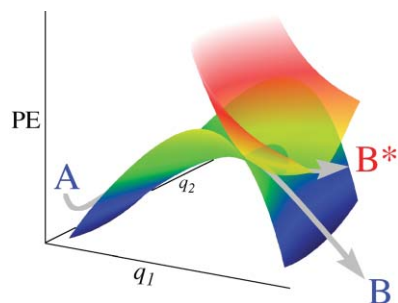
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Solid state ^{17}O NMR—an introduction to the background principles and applications to inorganic materials

Sharon E. Ashbrook and Mark E. Smith*

^{17}O solid state NMR is an exquisitely sensitive probe of the local atomic scale structure and the physical background to the NMR interaction and techniques is given. A range of examples from different inorganic materials applications illustrate the utility of ^{17}O NMR.





Electronically nonadiabatic thermal reactions of organic molecules

Barry K. Carpenter*

The thermal generation of luminescent electronic excited states is easy to detect. However, the thermal generation of non-luminescent excited states may be more common, especially for reactive intermediates.

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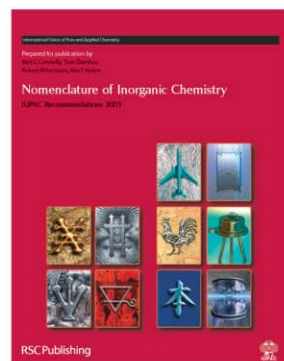
 Electronic supplementary information (ESI) is available *via* the online article (see <http://www.rsc.org/esi> for general information about ESI).

Nomenclature of Inorganic Chemistry IUPAC Recommendations 2005

Edited by N G Connelly, T Damhus, R M Hartshorn and A T Hutton

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