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Cover

See Sourav Saha and J. Fraser Stoddart, page 77.

A photoactive molecular triad converts light into electrical energy, generating photocurrent which powers a supramolecular nanoscale machine.

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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

January 2007/Volume 4/Issue 1

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EDITORIAL

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Editorial—building on success

Chem Soc Rev editor, Dr Robert Eagling and new editorial board chair Dr Wilhelm Huck, review some of the 2006 *Chem Soc Rev* highlights and look forward to an exciting 2007.



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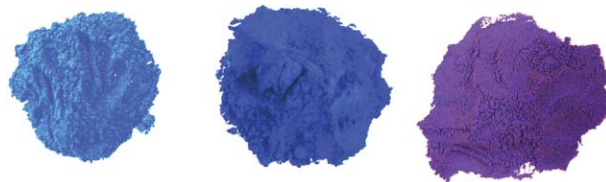
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The invention of blue and purple pigments in ancient times

Heinz Berke

Prehistoric mankind lacked the blue colour for painting. Later, ancient civilisations invented blue and purple pigments by chemical synthesis. The manmade ancient blue and purple pigments Egyptian Blue ($\text{CaCuSi}_4\text{O}_{10}$), Han Blue ($\text{BaCuSi}_4\text{O}_{10}$), Han Purple ($\text{BaCuSi}_2\text{O}_6$), Maya Blue ($x \cdot \text{indigo} \cdot (\text{Mg,Al})_4\text{Si}_8(\text{O,OH,H}_2\text{O})_{24}$) and Ultramarine Blue ($(\text{Na,Ca})_8(\text{AlSiO}_{12})_n(\text{S}_2\text{SO}_4, \text{Cl})$) are described with their chemistry and historical roles.

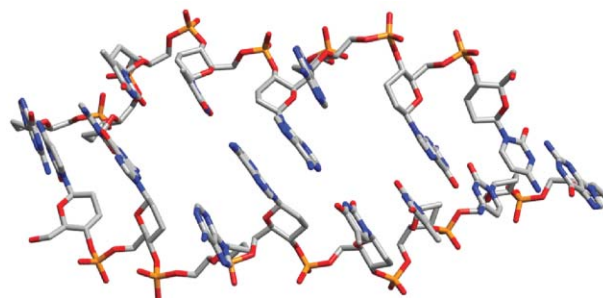


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The long and winding road to the structure of homo-DNA

Martin Egli,* Paolo Lubini and Pradeep S. Pallan

An account of the heroic efforts to determine the crystal structure of a DNA homologue and its implications for nucleic acid stability and pairing properties.

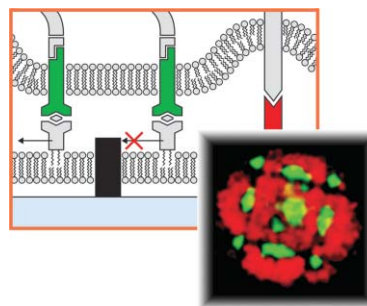


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Micropatterned supported membranes as tools for quantitative studies of the immunological synapse

Kaspar Mossman and Jay Groves*

Micropatterned membranes reveal spatial regulation in immune cell signaling.



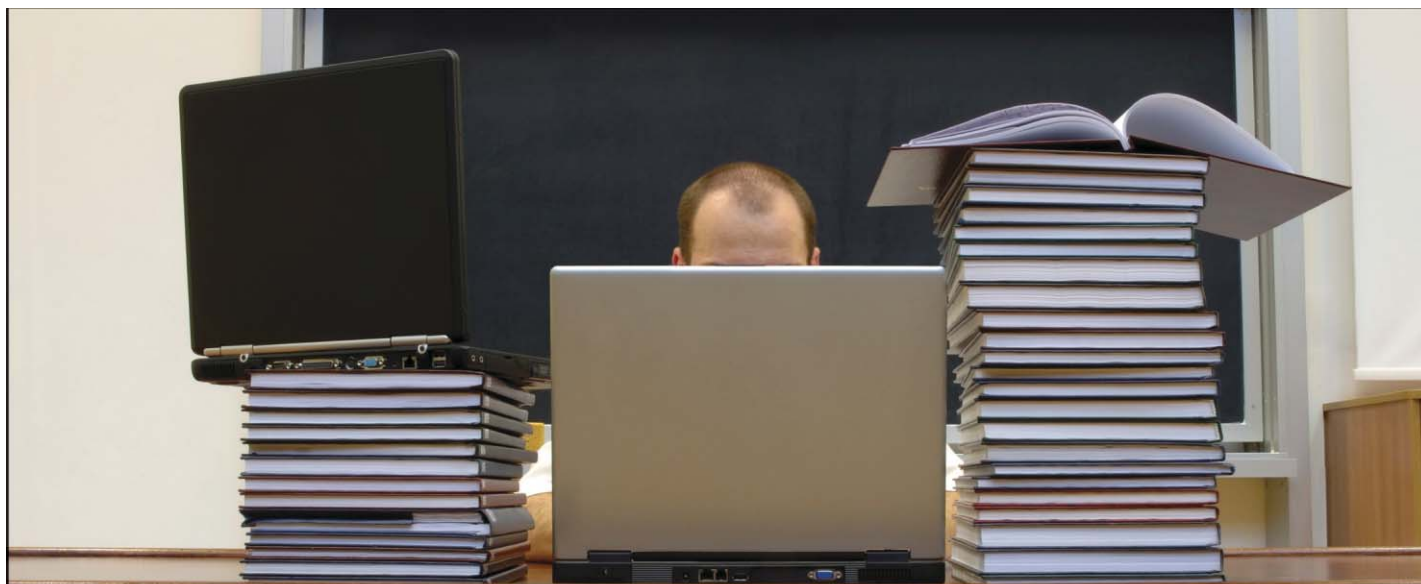
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Ring closing enyne metathesis: A powerful tool for the synthesis of heterocycles

H el ene Villar, Marcus Frings and Carsten Bolm*

Catalytic ring closing enyne metathesis allows the synthesis of a variety of functionalised heterocycles under mild reaction conditions.

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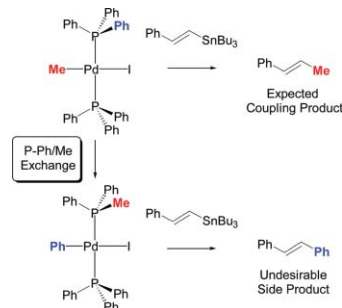
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Transition metal-mediated P–C/X exchange at bound phosphine ligands (X = aryl, alkyl, NR₂, OR and F): scope and mechanisms

Stuart A. Macgregor

Bad news for catalysis! Processes resulting in the net replacement of a phosphine ligand substituent are surveyed and categorised in this tutorial review. Proposed mechanisms and the factors promoting these unusual—and often highly undesirable—reactions are discussed.

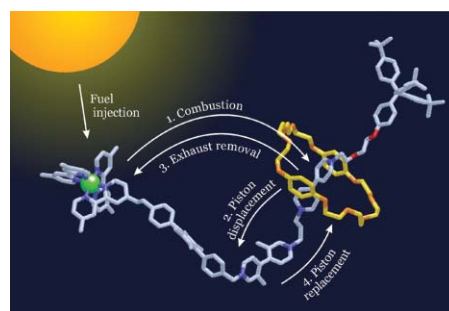


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Photo-driven molecular devices

Sourav Saha and J. Fraser Stoddart*

Recent developments of the light-powered molecular and supramolecular machines—one based on the interlocked molecules and the other based on sterically crowded alkenes—are surveyed.

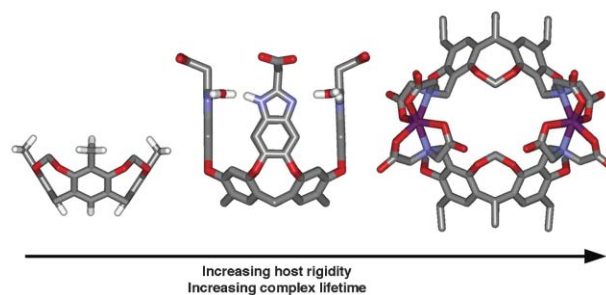


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Structure and binding properties of water-soluble cavitands and capsules

Shannon M. Biros and Julius Rebek, Jr.*

This review describes the evolution of water-soluble cavitands and capsules. An emphasis has been placed on the influence of host structure on guest selectivity and resulting complex stability.

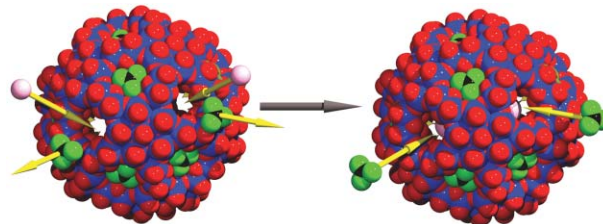


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Polyoxometalate clusters, nanostructures and materials: From self assembly to designer materials and devices

De-Liang Long, Eric Burkholder and Leroy Cronin*

Polyoxometalates, with all their relevance to catalysis, reactivity, electronic structure, materials science and medicine are set to become a paradigm for those working in nanoscale science.



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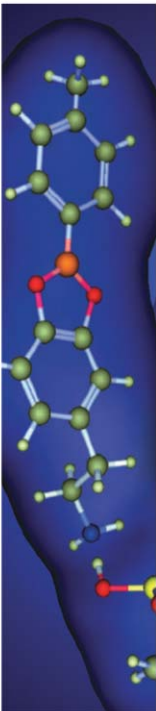
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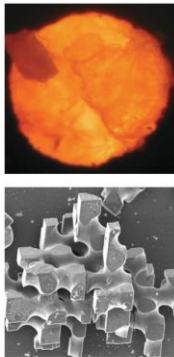
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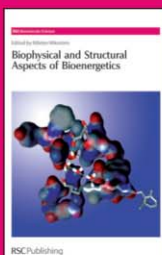
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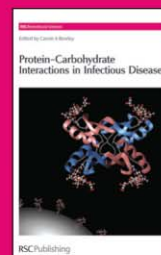


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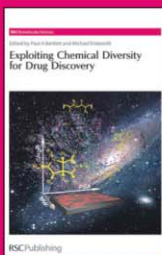


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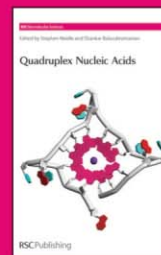


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