

## IN THIS ISSUE

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## In this issue...

Chemical Science – a ‘snapshot’ of the latest news and developments across the chemical sciences  
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Chemical biology articles published in this journal also appear in the *Chemical Biology Virtual Journal*:  
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### Cover

See Carolina de las Heras Alarcón, Sivanand Pennadam and Cameron Alexander, page 276.

Cover shows schematic of responsive functional polymer micelles assembled in solution. Polymers of this type, loaded with drugs, biopolymers or nucleic acids offer promise as the next generation of active or ‘smart’ therapeutics. Front cover image reproduced with permission of Dr. Cameron Alexander.

## CHEMICAL SCIENCE

C17

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

March 2005/Volume 2/Issue 3

[www.rsc.org/chemicalscience](http://www.rsc.org/chemicalscience)

## EDITORIAL

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### Thematic issue on functional polymers

**Editorial:** Wilhelm Huck gives an overview of the five ‘Functional polymers’ reviews included in this issue.



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# CSR

## Chemical Society Reviews

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CSR publishes accessible, succinct and reader-friendly articles on topics of current interest in the chemical sciences. The promotion of international and multidisciplinary awareness and cooperation is particularly encouraged. CSR publishes two article types: tutorial reviews, which present an accessible introduction to the topic, and critical reviews, which provide a deeper evaluation of the current literature.

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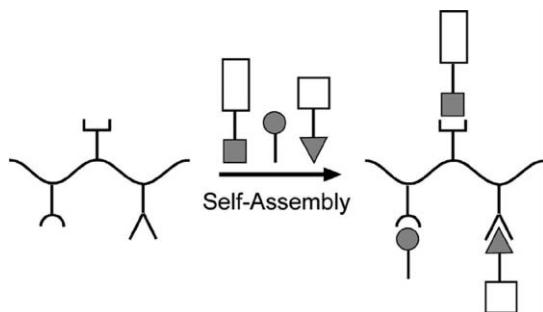
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## Non-covalent side-chain polymers: design principles, functionalization strategies, and perspectives

Joel M. Pollino and Marcus Weck\*

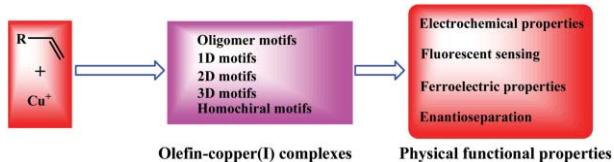
Using methodologies perfected by Nature, complex side-chain functionalized polymers for a wide variety of applications can be constructed like children's Lego toys *via* self-assembly.



## Highly stable olefin–Cu(I) coordination oligomers and polymers

Qiong Ye, Xi-Sen Wang, Hong Zhao and Ren-Gen Xiong\*

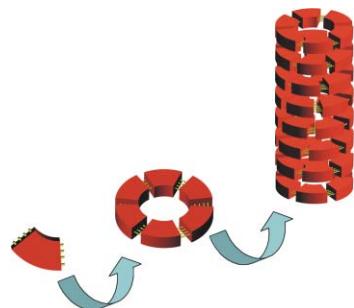
From theories to functions, the structure, novel physical properties and potential applications of highly stable olefin–Cu(I) coordination oligomers and polymers are described.



## Hierarchical self-assembly of columnar aggregates

Henk M. Keizer and Rint P. Sijbesma\*

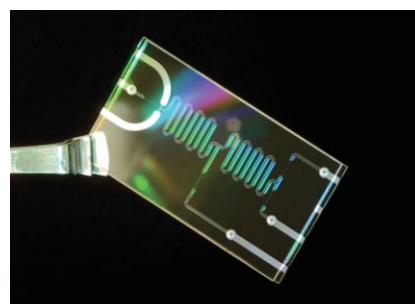
Nature uses hierarchical self-assembly to reliably make large functional aggregates. Chemists have recently begun to use this approach for nanometer-sized columnar objects.



## The application of micro reactors for organic synthesis

Paul Watts\* and Stephen J. Haswell

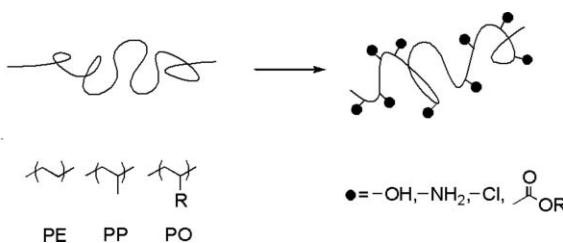
This article explores how miniaturisation may revolutionise chemical synthesis, from the preparation of nanograms of material for drug discovery to the multi-tonne production of fine chemicals.



**Computer-aided organic synthesis**

Matthew H. Todd

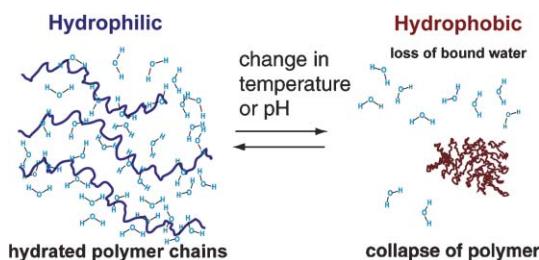
Computers are winning world championships at chess. Can we expect similar success in synthetic design?

**Post-polymerization functionalization of polyolefins**

Nicole K. Boaen and Marc A. Hillmyer\*

The subject of this *tutorial review* is the modification of polyolefins, the highest volume commodity plastics, to yield value-added materials that contain pendant functional groups through chemical conversion of these inherently unreactive macroalkanes.

## CRITICAL REVIEW

**Stimuli responsive polymers for biomedical applications**

Carolina de las Heras Alarcón, Sivanand Pennadam and Cameron Alexander\*

Stimuli responsive, or 'smart', polymers offer the possibility of controlling biological functions in much the same way as natural macromolecules, leading to a major development focus for biomedical applications.

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