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Comment: 2004's fastest organic and biomolecular chemistry!

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In January 2003, the Royal Society of Chemistry launched *Organic & Biomolecular Chemistry* (*OBC*) – a journal promising to provide high quality research from all aspects of synthetic, physical and biomolecular organic chemistry. The journal was set to build upon the foundations laid down by its predecessor publications (*J. Chem. Soc., Perkin Trans. 1* and *J. Chem. Soc., Perkin Trans. 2*) as well as complement the subject coverage already published in prestigious general chemistry journals such as *Chemical Communications* and *Chemical Society Reviews*. Nearly two years on, just how is the programme developing and what can the community expect to see from the Royal Society of Chemistry (RSC)?

Times to publication

All RSC authors benefit from the fastest publication times in the business, thanks to fast and thorough peer review, dedicated editorial staff and technical innovation throughout the publication process. It has been these superior publication times, that have made *OBC* the ideal home for the most exciting work in the field, and set it apart from its competitors. Communications are typically published a whole week† faster than its closest competitor, at an impressive 47 days! Full papers are just as notable, at just 87 days to first publication on the web.

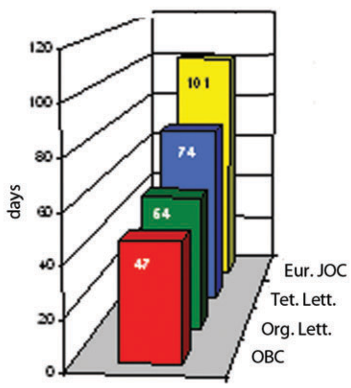


Fig. 1 Times to publication for Communications (web).

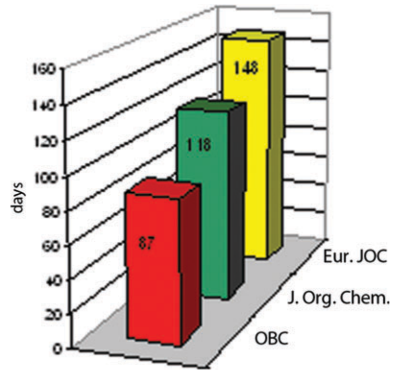
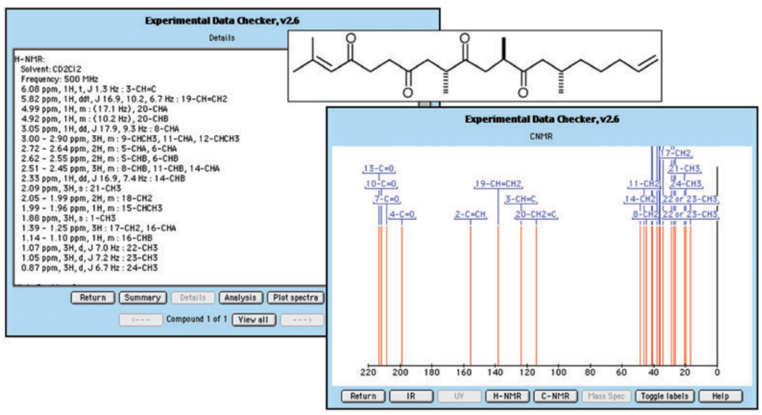


Fig. 2 Times to publication for Papers (web).

Not only is the publication process fast, it is carried out to the highest of standards. In October 2004, this was recognised by the Association of Learned and Professional Society Publishers (ALPSP), as it awarded *OBC* a Highly Commended Certificate in the category of Learned Journals. The judges recognised the journal's good use of typography and colour, to balance the academic content. The RSC has strived to develop tools to help authors with the publication process. A recent collaboration with the Unilever Centre for Molecular Science Informatics (at the University of Cambridge, UK) has resulted in the launch of the Experimental Data Checker – a java applet which analyses experimental data. Its aim is to provide helpful information which an author can use to

Fig. 3 Dr. Caroline Potter and Mrs. Karen Harries-Rees receive ALPSP prizes.



† Times to publication from receipt to electronic publication are the mean time in days for the period January–July 2004. Data are shown for all **Communications** published in *Organic & Biomolecular Chemistry* and *European Journal of Organic Chemistry* (issues 1–15, 2004), Letters published in *Organic Letters* [issues 1–15, 2004 (alternate letters from alternate issues)] and Short Communications published in *Tetrahedron Letters* [issues 1–29, 2004 (alternate communications from issues 1,5,9,13,17,21,25 and 29)]. Data are shown for **Papers** published in *Organic & Biomolecular Chemistry* and *European Journal of Organic Chemistry* (alternate papers from issues 1–15, 2004) and Papers published in *Journal of Organic Chemistry* [issues 1–15, 2004 (alternate papers from alternate issues)].

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improve a paper, a referee can use to check a paper and a reader can use to analyse a paper. A detailed study of this has been published in *OBC*.[1]

Impact

Publishing the best work in exceptionally fast times is in itself a great achievement, but *OBC* has also proven itself to be an excellent venue for authors to get their work noticed. The National Library of Medicine has chosen to fully index the journal in the Index Medicus/ MEDLINE – the world's most comprehensive source of life sciences and biomedical bibliographic information. Coverage begins from volume 1, issue 1, recognising the quality and quantity of biological research contained within the journal, and its importance within the community. In addition, all chemical biology content published in the journal is also showcased free of charge (for a limited period) in the RSC's Chemical Biology Virtual Journal (www.rsc.org/ chembiol). *OBC* has also benefited from RSC initiatives to highlight and showcase the latest news and research developments in news supplements such as *Chemical Science*.


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Chemical Science

Progress in artificial photosynthesis

Measuring molecules in the heart

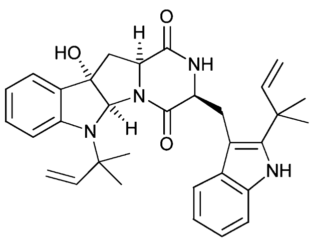
Cool deposition

Contacting an organic friend

A number of papers promoted in this way, have since gone on to be covered in publications such as *Science* and *Nature*. 'To date I have published two papers in *Organic & Biomolecular Chemistry* and the process works great' says Brad Smith, professor of chemistry at the University of Notre Dame, Indiana, USA. 'The RSC is clearly working hard to promote the papers that appear in its journals.' The remit of *OBC* continues to be to bring together molecular design, synthesis, structure, function and reactivity in one journal. We have had many highlights and this article gives a selection of some of the best.

Synthetic organic chemistry

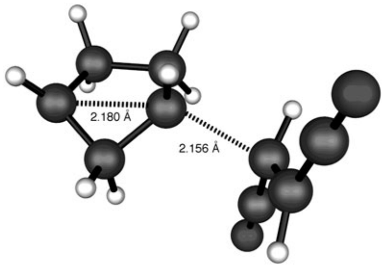
Professor K. C. Nicolaou of the Scripps Research Institute and UCSD and Professor Ronald Evans of the Salk Institute reported the development of a high affinity FXR agonist. The authors screened a library containing 10000 small molecules for activity as FXR agonists. Several compounds which are the most active FXR agonists so far reported were identified and optimized giving a detailed example of combinatorial chemistry applied to ligand discovery.[87] Professor Steven Ley and his colleagues in Cambridge published the first synthesis of (+)-okaramine C; one of the most biologically active members of the okaramine series. Members of this series of natural products are known to be potent insecticides and considerable synthetic effort worldwide has been invested in them in recent months.[2]



Okaramine C

Physical organic chemistry

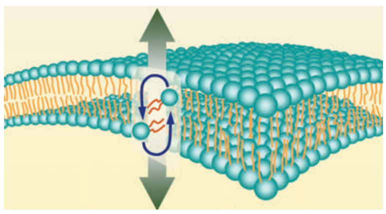
Professor Barry Carpenter from Cornell University, USA showed how computers are helping to solve the puzzle of unusual mechanisms and informing us of things we never knew we already knew! In his paper Professor Carpenter details how he has used existing data and state-of-the-art electronic structure calculations to provide a basis for understanding experimental results. Starting with the puzzling, but reasonably simple, example of the discrepancy between the isomerisation of cyclopropene and bicycle[2.1.0]pentane, Professor Carpenter has shown that although a difference between the energetics of the reactions is evident, this difference need not be due to a change in mechanism but due to unfavourable interactions which can account for all the large energy differences between, what at first glance would appear to be, two analogous reactions.[3]



Professor Ken Houk, UCLA, USA reports new developments in theoretical work on the mechanism of nitroso ene reactions. The proposed new stepwise mechanism conflicts with some previous speculation in the literature and corrects some specific errors. This has wider implications on nitroso ene reactions and on other similar ene reactions.[68]

Chemical biology

Enzymes that initiate a flip–flop action in membrane lipids have been designed by Professor Bradley Smith and his research group at the University of Notre Dame, USA. These translocases may lead to advancements in the search for chemotherapeutic agents.[4]



Professor François Diederich and his co-workers at ETH, Switzerland have undertaken fluorine scans of thrombin inhibitors to provide meaningful protein–ligand structure–activity

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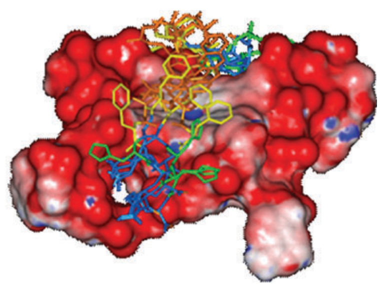
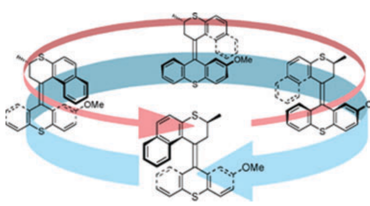
relationships. Professor Diederich says he is 'strongly convinced that a full understanding of the effects of fluorine on protein binding affinity and selectivity will greatly benefit future structure-based design and lead to optimisation in medicinal chemistry'.[5]

Shankar Balasubramanian and his colleagues at Cambridge and London Universities, UK, have demonstrated that combining classic DNA binding scaffolds with selected peptides can enhance their binding specificity towards G-quadruplexes. The Balasubramanian group investigated the selectivity of three tetrapeptides, each with some intrinsic specificity for quadruplex over double-stranded DNA, when attached to heterocyclic DNA-binding scaffolds.[6]

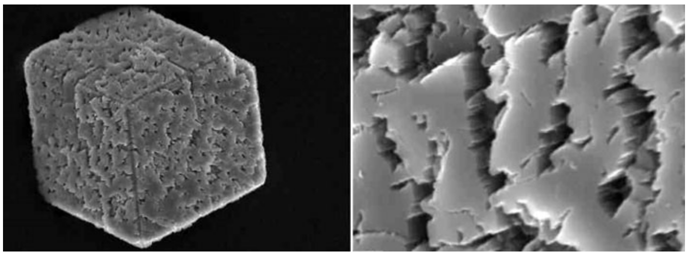


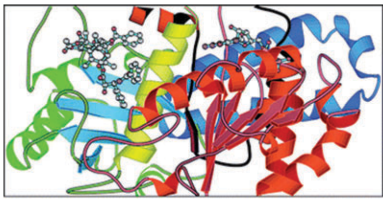
Supramolecular organic chemistry

Our first two years have seen several papers on molecular motors including two papers from Professor Ben Feringa, University of Groningen, The Netherlands, on the subject of light-driven unidirectional rotary molecular motors.[7,106]



Research detailing work towards understanding the key factors governing specific mineralization phenomena was presented by Professor Hamilton and his colleagues from Yale University, USA and the Weizmann Institute of Science, Israel. This study looks at the





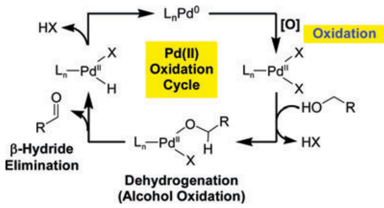
unique properties of a gel in influencing the growth and morphology of crystals showing how the appearance of a calcite crystal changes dramatically over time.[8]

In an innovative paper Professor Michael Burkart, UCSD, USA and Dr James La Clair, Bionic Bros, Germany, reported a novel method to identify biological interactions using a simple CD. Using inkjet printing to attach molecules to the surface of a CD, proteins can be identified by their interaction with the laser light when read by a CD player. Many sophisticated molecular recognition devices exist which use lasers to detect molecules. The real benefit of this advance lies in the fact that the CD player is a common and inexpensive electronic device. In the words of Michael Burkart "Initially our plan envisioned a system for the scientist to screen molecules without requiring a large research budget. Soon thereafter, we realized that this technology could bring molecular vision to anyone owning a computer with a CD player".[114]

OBC does not only publish communications and full papers. Review material in the form of Emerging Areas and Perspectives is also included.

Emerging Areas

OBC's Emerging Areas are personal accounts of new areas of research and we have published 14 to date.[12–18,43,50,57,81,92,100,102] The areas covered have been diverse. In her Emerging Area, Professor Anna Mapp, University of Michigan, USA discusses the many different approaches currently under investigation in the study of transcription to create artificial repressors and gene activators.[92] Professor Helen Blackwell, University of Wisconsin – Madison, USA, discussed microwave-assisted solid-phase organic reactions as the tool that could allow combinatorial chemistry to deliver on its promise—providing rapid access to large collections of diverse small molecules.[43] Professor Matthew Sigman, University of Utah, USA, covered palladium(II)-catalysed oxidations, a field that has recently reappeared at the forefront of organometallic catalysis.[17]



Perspectives

In our Perspectives we have published short reviews on a range of topics.[19–32,42,62,63,67,73,91,93,111,113] Two Perspectives in the same issue covered two closely linked research areas in the fight against cancer: microtubules and epothilones. Professor Karl-Heinz Altmann from ETH, Switzerland, looked at the different structures of the epothilones and mapped out the progress to date in getting drugs based on them to the elusive clinical-trial stage.[25] Meanwhile, Professor Linda Amos at the Laboratory of Molecular Biology, Cambridge University, UK, covered the other side of this research taking a closer look at the different physical structures of microtubules, and how these structures are stabilised by the epothilone-based drugs such as Taxol.[26] In synthetic polymer chemistry, Professor Jeff Moore, University of Illinois at Urbana-Champaign, USA considered nucleation–elongation polymerization, a relatively unexplored avenue of this field offering some unique and interesting thermodynamic and kinetic attributes not found in the more classical mechanisms of polymer chemistry.[19] Professor Shunichi Fukuzumi, Osaka University, Japan gave us a new perspective of electron transfer chemistry, describing for fine control of electron transfer reactions including back electron transfer in the charge separated state of artificial photosynthetic compounds and its synthetic application.[67]

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