www.publish.csiro.au/journals/ajc

Aust. J. Chem. **2005**, *58*, 153–154

Introducing Research Fronts

In this issue we introduce the concept of RESEARCH FRONTS. These encompass a cluster of papers in a developing or topical area. Such a collection of papers might include (for example) a Short Review, two or three Rapid Communications, and an Opinion. Thus, RESEARCH FRONTS will enable readers to gain an appreciation for the topic and its pressing issues.

We will publish RESEARCH FRONTS in areas that are new or rapidly developing but not mature enough to publish a whole special issue. We may also publish RESEARCH FRONTS in more established areas where a few recent developments are of sufficient potential importance to the broader chemistry community to warrant drawing urgent attention to the area in this way.

The motivation behind publishing RESEARCH FRONTS is to give researchers the opportunity to have their important results published rapidly and in a forum situation, thereby getting the benefits of publishing in a specialist arena but retaining the advantage of a broad readership. RESEARCH FRONTS will serve to keep readers on the cutting edge of research, and will thus provide a further reason to open every issue of the *Australian Journal of Chemistry*.

'Ionic Liquids—The Neglected Issues' is the theme of the current RESEARCH FRONT. Purity, stability, biodegradability, toxicity, and recycling are issues that are often brought up at conferences but are only starting to appear in the literature. 'The fun and excitement of exploring new uses for ionic liquids has buried these neglected issues,' according to John Wilkes, Director of the USAFA's Chemistry Research Center, while Simon Ferguson of the University of Newcastle wryly comments that 'these new yellowish solvents were labelled as 'green'… and this was not to be the last irony in their colourful history.' The first article in the RESEARCH FRONT is a Review by Peter Scammells, Janet Scott, and Rob Singer.[1] Their Review addresses these key issues and also summarizes the approaches that have been developed for recycling ionic liquids.

'All these aspects [purity, stability, biodegradability, toxicity, and recycling] should be considered and included in future product design if ionic liquids are really meant to be a green, sustainable alternative [to] conventional organic solvents,' according to researcher Piotr Stepnowski at the University of Gdańsk. Stepnowski believes that the growing use of ionic liquids will inevitably lead to their presence in the environment. He and his co-workers have been studying the uptake of ionic liquids by soil, and in the first Rapid Communication[2] they present preliminary data showing that ionic liquids bind strongly to sediments, and that this binding increases with alkyl side-chain length.

Hydrolytic stability is an important property of ionic liquids because water is a very common (almost ubiquitous) impurity in these solvents. In the second Rapid Communication,[3] Gary Baker, a researcher at Los Alamos National Laboratory, reports a colorimetric method for the measurement of the relative hydrolytic stabilities of ionic liquids. The technique reported is simple to apply, and degradation in ionic liquids can even be qualitatively assessed by the naked eye with this approach.

We are aiming to publish several RESEARCH FRONTS each year. Feedback on this issue and suggestions for future RESEARCH FRONT topics are very welcome.

Alison Green
Editor

P.S. You can now see what are the hottest papers in *Australian Journal of Chemistry* by clicking on 'Most Read' on the journal's homepage. The list is updated daily. When we went to press the top twenty were:

1 Chemistry of Carbon Nanotubes
Tong Lin, Vardhan Bajpai, Tao Ji, and Liming Dai
Aust. J. Chem. **2003**, *56(7)*, 635. doi:10.1071/CH02254

2 The Challenges with Substance Databases and Structure Search Engines
Helen Cooke and Damon D. Ridley
Aust. J. Chem. **2004**, *57(5)*, 387. doi:10.1071/CH03315

3 Advances in the Negishi Coupling
Guillaume Lessene
Aust. J. Chem. **2004**, *57(1)*, 107. doi:10.1071/CH03225

4 Design of Ionic Liquids for Electrochemical Applications
Masahiro Yoshizawa, Asako Narita, and Hiroyuki Ohno
Aust. J. Chem. **2004**, *57(2)*, 139. doi:10.1071/CH03240

5 Ionic Liquids Based on Imidazolium and Pyrrolidinium Salts of the Tricyanomethanide Anion
Stewart A. Forsyth, Stuart R. Batten, Qing Dai, and Douglas R. MacFarlane
Aust. J. Chem. **2004**, *57(2)*, 121. doi:10.1071/CH03245

6 Manganese Dioxide Allylic and Benzylic Oxidation Reactions in Ionic Liquids
Ivan Hemeon, Neil W. Barnett, Nicholas Gathergood, Peter J. Scammells, and Robert D. Singer
Aust. J. Chem. **2004**, *57(2)*, 125. doi:10.1071/CH03246

7 Thermal Degradation of Ionic Liquids at Elevated Temperatures
Krisztian J. Baranyai, Glen B. Deacon, Douglas R. MacFarlane, Jennifer M. Pringle, and Janet L. Scott
Aust. J. Chem. **2004**, *57(2)*, 145. doi:10.1071/CH03221

10.1071/CH05042 0004-9425/05/030153

8 Complex Molecular Architecture Polymers via RAFT
Leonie Barner, Christopher Barner-Kowollik, Thomas P. Davis, and Martina H. Stenzel
Aust. J. Chem. **2004**, *57(1)*, 19. doi:10.1071/CH03232

9 Keto–Enol Tautomerism as a Polarity Indicator in Ionic Liquids
Martyn J. Earle, Brian S. Engel, and Kenneth R. Seddon
Aust. J. Chem. **2004**, *57(2)*, 149. doi:10.1071/CH03259

10 Towards the Diastereoselective Functionalization of Non-Racemic Acetal Derivatives of η^6-Arylcarbonyl Complexes of Tricarbonylchromium
Jackie D. Kendall and Paul D. Woodgate
Aust. J. Chem. **1999**, *51(12)*, 1083. doi:10.1071/C98054

11 Amyloid Fibrils in Bionanotechnology
Sarah H. Waterhouse and Juliet A. Gerrard
Aust. J. Chem. **2004**, *57(6)*, 519. doi:10.1071/CH04070

12 Designing Biostable Polyurethane Elastomers for Biomedical Implants
Pathiraja A. Gunatillake, Darren J. Martin, Gordon F. Meijs, Simon J. McCarthy, and Raju Adhikari
Aust. J. Chem. **2003**, *56(6)*, 545. doi:10.1071/CH02168

13 Size Effects in ZnO: The Cluster to Quantum Dot Transition
Annabel Wood, Michael Giersig, Michael Hilgendorff, Antonio Vilas-Campos, Luis M. Liz-Marzán, and Paul Mulvaney
Aust. J. Chem. **2003**, *56(10)*, 1051. doi:10.1071/CH03120

14 Charge Transfer Polymerization in Ionic Liquids
Ranganathan Vijayaraghavan and Douglas R. MacFarlane
Aust. J. Chem. **2004**, *57(2)*, 129. doi:10.1071/CH03236

15 An Alternative Synthesis of Some Carbohydrate α-Amino Acids
Grant S. Forman, Adrian Scaffidi, and Robert V. Stick
Aust. J. Chem. **2004**, *57(1)*, 25. doi:10.1071/CH03214

16 Mimicking the Motion of Life: Catalytically Active Rotaxanes as Processive Enzyme Mimics
Pall Thordarson, Roeland J. M. Nolte, and Alan E. Rowan
Aust. J. Chem. **2004**, *57(4)*, 323. doi:10.1071/CH03302

17 Molecular Electronics: From Basic Chemical Principles to Photosynthesis to Steady-State Through-Molecule Conductivity to Computer Architectures
Jeffrey R. Reimers, Ante Bilić, Zheng-Li Cai, Mats Dahlbom, Nicholas A. Lambropoulos, Gemma C. Solomon, Maxwell J. Crossley, and Noel S. Hush
Aust. J. Chem. **2004**, *57(12)*, 1133. doi:10.1071/CH04132

18 Taxane Diterpene Synthesis Studies. Part 1: Chemoenzymatic and Enantiodivergent Routes to AB-ring Substructures of Taxoids and *ent*-Taxoids
Martin G. Banwell, Penny Darmos, and David C. R. Hockless
Aust. J. Chem. **2004**, *57(1)*, 41. doi:10.1071/CH03164

19 Asymmetric Synthesis of (–)-Swainsonine
Karl B. Lindsay and Stephen G. Pyne
Aust. J. Chem. **2004**, *57(7)*, 669. doi:10.1071/CH04009

20 Homogeneous Controlled Free Radical Polymerization in Aqueous Media
Andrew B. Lowe and Charles L. McCormick
Aust. J. Chem. **2002**, *55(7)*, 367. doi:10.1071/CH02053

References

[1] P. J. Scammells, J. L. Scott, R. D. Singer, *Aust. J. Chem.* **2005**, *58*, 155. doi:10.1071/CH04272
[2] P. Stepnowski, *Aust. J. Chem.* **2005**, *58*, 170. doi:10.1071/CH05018
[3] G. A. Baker, S. N. Baker, *Aust. J. Chem.* **2005**, *58*, 174. doi:10.1071/CH05028