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 retaining the advantage of a broad readership. RESEARCH FRONTS will serve to keep readers on the cutting edge of 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 retaining the advantage of a broad readership.

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

2 The Challenges with Substance Databases and Structure Search Engines
   Helen Cooke and Damon D. Ridley

3 Advances in the Negishi Coupling
   Guillaume Lessene

4 Design of Ionic Liquids for Electrochemical Applications
   Masahiro Yoshizawa, Asako Narita, and Hiroyuki Ohno

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

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

7 Thermal Degradation of Ionic Liquids at Elevated Temperatures
   Krisztian J. Baranayai, Glen B. Deacon, Douglas R. MacFarlane, Jennifer M. Pringle, and Janet L. Scott

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8 Complex Molecular Architecture Polymers via RAFT
Leonie Barner, Christopher Barner-Kowollik,
Thomas P. Davis, and Martina H. Stenzel

9 Keto–Enol Tautomerism as a Polarity Indicator in
Ionic Liquids
Martyn J. Earle, Brian S. Engel, and Kenneth R. Seddon

10 Towards the Diastereoselective Functionalization of
Non-Racemic Acetal Derivatives of η⁶-Arylcarbonyl
Complexes of Tricarbonylchromium
Jackie D. Kendall and Paul D. Woodgate

11 Amyloid Fibrils in Bionanotechnology
Sarah H. Waterhouse and Juliet A. Gerrard

12 Designing Biostable Polyurethane Elastomers for
Biomedical Implants
Pathiraja A. Gunatillake, Darren J. Martin, Gordon F.
Meijs, Simon J. McCarthy, and Raju Adhikari

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

14 Charge Transfer Polymerization in Ionic Liquids
Ranganathan Vijayaraghavan and Douglas R. MacFarlane

15 An Alternative Synthesis of Some Carbohydrate
α-Amino Acids
Grant S. Forman, Adrian Scaffidi, and Robert V. Stick

16 Mimicking the Motion of Life: Catalytically Active
Rotaxanes as Processive Enzyme Mimics
Pall Thordarson, Roeland J. M. Nolte, and Alan E. Rowan

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

18 Taxane Diterpene Synthesis Studies. Part 1:
Chemoenzymatic and Enantiodivergent Routes to
AB-ring Substructures of Taxoids and ent-Taxoids
Martin G. Banwell, Penny Darnos, and David
C. R. Hockless

19 Asymmetric Synthesis of (–)-Swainsonine
Karl B. Lindsay and Stephen G. Pyne

20 Homogeneous Controlled Free Radical Polymerization
in Aqueous Media
Andrew B. Lowe and Charles L. McCormick

References