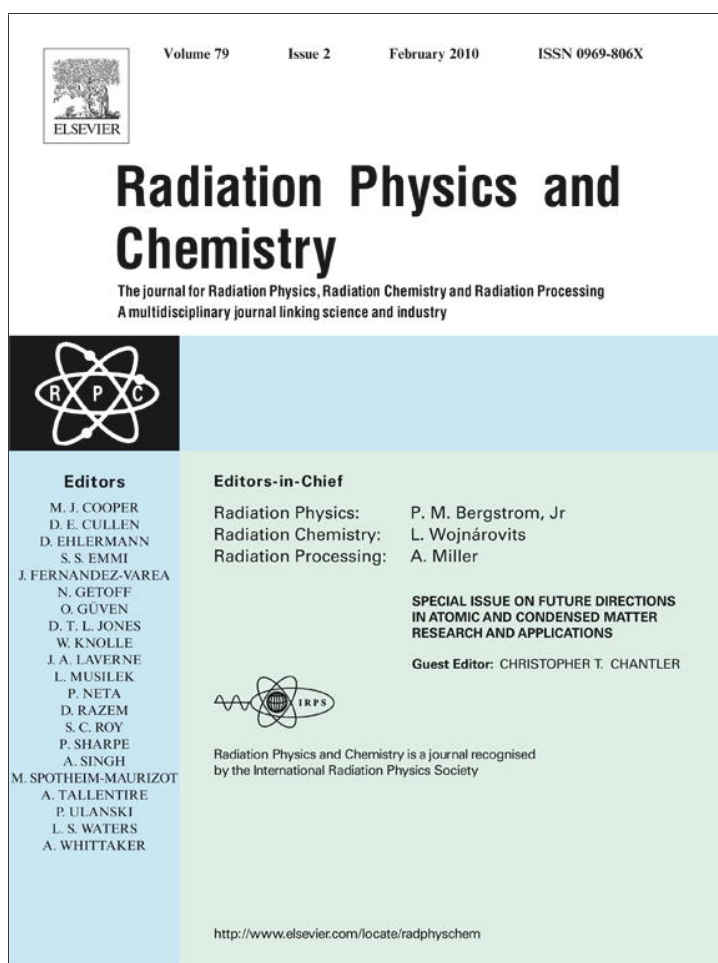


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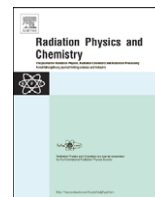
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Editorial

This special issue is comprised of selected extended Plenaries from an International Forum on Future Directions in Atomic and Condensed Matter Research and Applications held at Hercus Theatre, Physics, University of Melbourne, on the 22nd and 23rd September, 2008.

Focus areas included:

- Processes in atomic and condensed matter physics: potential, development and action
- Quantitative X-ray and particle analytical techniques (XRF, XRD, XAFS, XANES, XERT, etc.)
- Sources, detector technologies and simulation
- Applications to chemistry, synchrotrons, minerals, mining, biosciences, nanostructure, medical diagnosis, pharmaceuticals and cultural heritage
- New technologies and industrial applications

I hope you find this Special Issue to be interesting, illustrating links between some key threads across disciplines from physics and chemistry through synchrotron science, diffraction, biophysics, biomedicine and engineering. The Issue begins with experts on the fundamental side in theory and experiment and leads towards diverse critical applications which nonetheless use much of the same infrastructure and understanding.



The thread of atomic and condensed matter theory and science is crucial to several developing applications and opportunities across these fields, and this is a key focus. The forum was coordinated by the International Radiation Physics Society and the School of Physics, University of Melbourne. We were gratefully supported by the DEST, Australia, and by the Australian Synchrotron for direct relevance to existing and up-coming opportunities in synchrotron research and applications. We were gratefully endorsed by the IUCr International Commission on XAFS (X-ray absorption fine structure) for the development of links and teaching with the wider community. The opening for the 49 attendees was given by the Deputy Vice-Chancellor (1), University of Melbourne, Prof. Frank Larkins and Prof. Liz Sonenberg, Dean of Science, University of Melbourne. I hope that from these selected plenaries you will agree that we have attained these objectives. I hope that several strengths and key opportunities are shown in the Special Issue, but the readers will be the judges of that!

My acknowledgements and thanks to all international and national Speakers, Session Chairs, and attendees, and especially to Justin Kimpton (Secretary) and Stephen Best (chemistry) and my students for their assistance in preparing the program.

Very best wishes and welcome.

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