# Editorial

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## XAFS conference proceedings and *JSR*

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This issue brings together papers from the 10th International Conference on X-ray Absorption Fine Structure (XAFS X) held in Chicago in August 1998. This is one of the major synchrotron radiation conferences, held every two years since 1981 when the first international meeting of XAFS experts was held in Daresbury, coincident with the operation of the first of the second-generation dedicated synchrotron radiation sources. The proceedings of these conferences have so far been published in a variety of journals and books. Now that the synchrotron radiation community have a journal of their own, it is only natural that the proceedings of this major synchrotron radiation conference is published in *JSR*. It is particularly satisfying to see these proceedings in *JSR* immediately after the proceedings of SRI'97, the largest of the synchrotron radiation conferences held every three years. We hope that, like the SRI'97 proceedings (Volume 5, Part 3, 1998), these proceedings will also be well received by the community.

The XAFS conferences have evolved over the years with the more recent conferences covering not only the advances in instrumentation, theory and method but also their applications in disciplines ranging from biological to environmental sciences. The size of the XAFS community has increased beyond the expectations of any of the pioneers of XAFS, several of whom were present at the conference and whose contributions form part of this issue. We are particularly pleased that the conference delegates were able to hear the first-hand historical account from Farrel Lytle, who has been on the centre stage of modern XAFS from its conception. The article from Lytle (pp. 123–134) is an essential reading for all concerned with X-ray physics. It traces the development of XAFS from the first observation of an absorption edge by Maurice de Broglie. An insight is provided as to how an 'obvious' explanation of XAFS in terms of photoelectron scattering was missed for decades, including by those involved with X-ray absorption and X-ray diffraction. The front cover of the issue is based on the historical account given in this article.

This issue thus represents an important stage in the development and exploitation of XAFS as well as *JSR*. The papers for this proceedings issue were refereed to the usual standards of *JSR* and differed in significant ways from the previous XAFS proceedings. Previously, the majority of the papers were refereed during the meeting. The papers for this conference were handled by *JSR* Co-editors and the Guest Editors (Heald, Baberschka, B. Bunker, Michalowicz, Koningsberger, Crozier, Manceau, Goulon, Oyanagi, Sayers, Morrison, Natoli and Rehr), who selected the referees and followed the normal refereeing procedure where referees were given up to six weeks to carry out rigorous refereeing. As a result, in a large number of cases substantial revision to the original manuscript took place. Despite much effort from the Co-editors and Guest Editors, a significant number of papers did not become acceptable. We believe that this effort is reflected in the improved quality of the proceedings. These proceedings differ to some extent from the SRI'97 proceedings in that, apart from the plenary papers, all of the papers, once accepted, were prepared as camera-ready manuscripts. We believe that this has helped in containing the costs of the proceedings without compromising the scientific quality of the papers. We invite comment from the community for this and future proceedings.

The issue thus reports on many of the advances in XAFS instrumentation (source, optics and detectors), theoretical and analytical methods to new expanding application areas. Each of this series of conferences has seen a new area emerge; the obvious one for this conference was Environmental Science (pp. 602–672). The emergence of third-generation high-energy sources has opened high-energy X-ray absorption edges. It has been generally assumed that beyond ~40 keV the lifetime broadening is such that little information can be obtained from the EXAFS oscillations. So far, for these elements, EXAFS at $L$-edges have been relied upon. The close proximity of $L_3$- and $L_2$-edges have limited the data range for these elements. We see the demonstration of the utility of the high-energy X-ray absorption edges in several of the papers from the ESRF (p. 179; Eu = 49 keV, W = 65.5 keV) and SPring-8 (p. 143 and p. 149; Pt = 78 keV, Pb = 88 keV and Bi = 90 keV). The rapid tunabilty of an undulator synchronized with an X-ray monochromator is shown (p. 174), furthering the scope of the quick EXAFS technique for which a 5 ms time record is demonstrated (p. 209). On the theoretical front, the development of more accurate atomic potentials are called for (p. 228) and a detailed theory for magnetic EXAFS is

given (p. 320). We see the combination of microscopy and XAFS in several of the papers, ranging from sorbed plutonium on tuff (p. 350) to manganese in micronodules (p. 359). The application areas are arranged alphabetically, ranging from Biology to Surfaces. These papers demonstrate the wide applicability of XAFS and, as such, it is not surprising that worldwide some 25% of all synchrotron radiation instruments are either devoted or partially used for performing XAFS. A large number of papers have been categorized under Environmental Science, where the applications range from pollution caused by incineration (p. 604) to the characterization of sedimentary iron in the Gulf of Trieste (p. 659). These and other papers in this and other application sections demonstrate the power of XAFS in elemental chemical speciation. At the end of the proceedings there is an open letter to the XAFS community from the UK XAFS user group (p. 799). The content of this letter needs to be debated within the XAFS community. We simply wish to reiterate that *JSR* has, from its launch in 1994, insisted on rigorous standards for XAFS data presentation as well as encouraging primary XAFS data deposition in a manner well established for crystallographic data where the IUCr has taken a major lead over the years [see *e.g.* Baker & Sanger (1999). *Acta Cryst.* D**55**, 2–3]. Perhaps the International XAFS Society and the IUCr commission on XAFS should take this on board.

Our position in the citation ranking tables continues to improve due to excellent papers submitted by authors, and the hard work which the referees have put towards it. We are now in the top 17% of all the SCI journals which number nearly 4800. We have a higher impact factor than *Review of Scientific Instruments*, *Nuclear Instruments and Methods*, *Journal of Physics A* and *Journal of Physics C* and are approaching the impact factors of *Physical Review C* and *Physical Review E*. For this issue we are grateful to the Managing Editor and his team for their tremendous effort in ensuring the high quality of production. We thank Dr Steve Heald, chairman of the publication committee, for acting as a Special Editor for this issue and coordinating the publication activities at the conference. We thank the guest editors for their hard work. We also take this opportunity to thank those co-editors who are retiring from the editorial board (M. Colapietro, G. Kulipanov, T. N. Lee, Y. C. Liu and A. R. D. Rodrigues) and acknowledge their tremendous work for *JSR*. We welcome several new members onto the board: C. T. Chen (Taiwan), R. R. Frahm (Germany), G. Oliva (Brazil), S. W. Wilkins (Australia) and A. F. Wrulich (Switzerland).

This issue is a testimony to our stated objective of 'providing the focus for the whole of the synchrotron radiation community' and we are pleased to serve the XAFS community *via* this conference proceedings. We believe that you will find this and other remaining 1999 issues of *JSR* an essential reading and would urge you to ensure that your library is subscribing to the journal, the only dedicated journal for our community.