Hot Topics and Current Needs in Archaeology – or Why Isn't Everyone Using SR?

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The application of Synchrotron Radiation to archaeology dates back to 1986 [1] and has been subsequently documented on a dedicated website at Daresbury [http://www.srs.ac.uk/srs/]. The majority of the applications in the 1990s used SR as a source for X-ray fluorescence microanalysis on a variety of archaeological and historical materials, including glass [2,3] ink and paper [4], dental calculus [5] and bone [6]. This repertoire has since been expanded to include X-ray micro-diffraction on materials such as iron [7], bone, wood [8] and Egyptian cosmetics [9]. More recent applications have included Small Angle X-ray Scattering to study the alterations of shape and size of bone mineral crystals as a result of diagenetic and microbial attack [10].

It is probably true to say, however, that SR has not yet made a great deal of impact on archaeology. It is of fundamental importance to realise that archaeology is about *human behaviour*, not primarily about *material objects*. Thus, to an archaeologist, the analysis of archaeological material is only of interest when it can be interpreted in the context of human behaviour. Arguably, it has taken 20 years for archaeologists and SR specialists to begin to identify applications of the technique which genuinely use the potential of the tool to answer questions of archaeological significance. Some of this delay undoubtedly stems from the fact that archaeology, unlike the 'harder' scientific disciplines, until recently has not possessed a fully unified view of what constitutes a 'high priority' in research terms – in many ways it has operated as a humanities subject, with as many 'priorities' as there are practitioners!

This is gradually changing, and national research priorities are emerging – particularly in the context of the preservation of the cultural heritage, where major research thrusts over the next few years will include *Preservation of Archaeological Remains in-situ*, and, for maritime countries, the location, identification and preservation of submerged archaeological sites (including, but not exclusively, shipwrecks). Now that this dialogue has begun, we can anticipate a fruitful period of the application of SR techniques in archaeology.

References

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