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## Geochemical survey and metalworking: analysis of chemical residues derived from experimental non-ferrous metallurgical processes in a reconstructed roundhouse

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**Abstract:** Geochemical survey is becoming a more frequently applied tool for site specific archaeological investigation. It has the potential to integrate site prospection and excavation data with post excavation artefact analysis, unifying two stages of the archaeological process. In the field of archaeometallurgy this is particularly relevant as sites of metalworking are liable to produce high geochemical loadings, related to the manufacture of metal goods and associated waste products such as slags. This paper describes the geochemical survey of an 'experiential' metalworking area within a reconstructed roundhouse, identifying geochemical enhancements associated with bronze and lead working. The geochemical survey of the roundhouse clearly defines areas of metalworking that can be related to recollected episodes of metalworking and quantifies the spatial distribution and absolute geochemical loadings from this activity. Consideration is given to how such geochemical enhancements should be archaeologically interpreted and whether geochemistry should be viewed as a micro-artefact and dealt with in a context specific way. It is suggested that geochemical survey can play an important role in defining evidence of metallurgy in archaeological investigations, particularly where such evidence remains elusive, e.g. the British Bronze Age.

**Keywords:** metallurgy, geochemistry, metal pollution, spatial survey, GIS

### 1.0 Introduction

Geochemical survey is becoming a more widely practised technique within archaeological research (Oonk *et al.* 2009a; Wilson 2009), which has the potential to identify evidence of anthropogenic activity that is otherwise invisible to conventional archaeological methods, i.e. the hidden site, context or landscape (Heron 2001). Despite this potential, geochemical survey has yet to establish itself as a technique that can consistently offer results demonstrably linked to human activities within the archaeological record (Oonk *et al.* 2009b), partly due to the difficulty in interpreting multifaceted geochemical data; "because of the complexity of site use history and the effects of post depositional processes" (Wilson *et al.* 2008). Archaeological geochemical survey has been applied on a variety of scales, ranging

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