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Surface Element and Structure Characterization of Mesopotamian Iron-stone Roll Seals and Weights: 2500BC –650 AD.

Thursday, 15 September 2011 14:05 (2 minutes)

Iron stone Mesopotamian seals are common objects in the Old Babylonian Period (2500 -1600 BC) and the much later Sassanide Period (226 BC - 651 AD). The black objects are commonly referred to in museum collections as 'heamatite'
Recently, we have demonstrated that these iron stone Mesopotamain objects consists not only of the mineral hematite (Fe2O3), but also magnetite (Fe3O4), goethite (FeO(OH)) and iron oxide - loaded calcite (FeOx – CaCO3) as well as a black glassy material (Fe-silicate glass?).
We performed micro-XRF, micro-XRD and XANES on the Phoenix and Micro-Xmas beam lines at the SLS. We investigated typical examples of iron stone Mesopotamian roll-seals from the NINO and RMO collections.
XRF spectra taken on Phoenix can be semi-quantitatively analysed, yielding information on the elements O, S, F, Na, Al, Si, P, S, Cl, K, Ca, Ti, V, Cr, Mn and Fe. In the investigated duck weight object we also found Pb. Elemental maps and XRD maps of selected part of the surface has been obtained from which we can related to particular species and solid solutions. XANES spectra give further evidence on the oxidation state of the elements.

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Advancing Quantitative Chemical Imaging

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