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INFLUENCE OF RESTORATION TREATMENTS ON THE CHEMICAL COMPOSITION OF HISTORICAL IRON GALL INKS

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Iron-gall-ink written manuscripts represent an important part of the cultural heritage of Europe. A distinction between different inks is of interest to a better understanding of production processes of historical handwritten books, documents, etc. Due to the fact, that historical writing materials in most cases contain impurities beside their main compounds, a differentiation by means of the chemical composition is often possible. This information is also useful for questions of provenance, authenticity and possible restoration treatments.

On the other hand many of these historical manuscripts are endangered by iron gall ink corrosion. This corrosion process induced by Fe^{2+} has been described frequently. Combined micro-XANES and micro-XRF investigations with synchrotron radiation reveal a correlation between the amount of some 3d-metals in the ink and the Fe2+/Fe3+-ratio. Restoration processes should increase the acidity as well as the concentration of damaging ions. This is contradictory to archaeometrical research.

Analyses on artificial dummies as well as historical manuscripts treated with aqueous restoration methods indicate that the chemical compositions of the inks change remarkably. Archaeometrical investigations on the historical documents should be carried out before a restoration, if it is possible. However by means of XRF and XANES it is possible to evaluate the results of different restoration treatments.