MINERALOGY STUDY IN THE NWF-PROJECT "RUSTY IRON"

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The restoration of iron is a very complex part of the archaeological restoration studies. From the time of the recovery, and the associated change in environmental parameters, decay occurs. The experience of the Archaeology Institute from the University Innsbruck has shown, that proper storage from metals after recovery and desalination with sodium sulphite is not enough for minimizing the damage of the archaeological objects. The goal of this NWF (Nachwuchsförderung) project is the careful mineralogical characterization of artefacts and the development of a fast and controlled workflow beginning at the transfer of the find and its initial treatment up to conservation measures. The focus of the mineralogical investigations is on the occurrence of Cl-bearing phases. The reason for this is the formation of the rust-phase "akaganeite". Akaganeite, β-FeOOH(Cl) forms in presence of chloride and low pH (STÅHL et al., 2003). It forms rust coatings and loose coverings on the archaeological objects (KELLER, 1969). In our study, we characterized the mineral assemblage of an artefact by wavelength-dispersive electron microprobe analysis and Raman-Spectroscopy. Fig. 1 shows a backscattered electron (BSE) image and a Cl-map of part of a cross section of a nail. At the border from an "inner area" (iron core) and "outer area" akaganeite can be found. These investigations in turn provide the basic data for further experimental investigations.

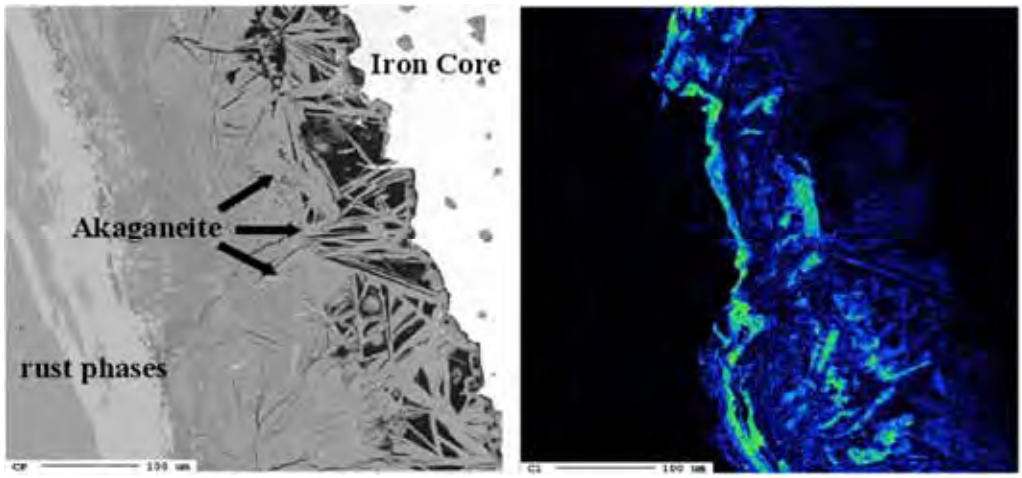

Figure 1. BSE image (left) and Cl-map (right) of a nail.

STAHL, K. et al. (2003): Corros. Sci., 45, 2563-2575
KELLER, P. (1969): Werkst. Korros., 20, 102-108