Contribution ID: **116** Type: **Invited talk**

Is it stabilized? PGAA as a tool for the determination of desalination success of archaeological iron objects

Tuesday, 10 December 2019 15:00 (27 minutes)

Cultural heritage made of iron is easily damaged by post excavation corrosion, caused by chloride ions diffusing into the finds during their burial in the soil. Therefore, the chlorine has to be eliminated by conservation treatment, for example by washing the objects in alkaline solutions.

The research project "Besonderes Eise(r)n bewahren"(funded by DBU) is designed for comparison of varying desalination treatments by quantifying the residual chlorine content after the conservation treatment. So, the less chlorine, the more efficient a treatment was, the safer the object and the archaeological record can be.

PGAA was the chosen method for chlorine measurement since it is non-destructive and therefore allows pre- and post-test-design of the experiments. It was tested in a large scale approach with 33 days measurement time and 128 measurements of totally 120 objects. Despite of changed mounting system during the project's runtime and heterogeneous sample material, the results were reproducible. Several alkaline solutions turned out as effective and low cost strategy for conserving archaeological iron objects.

Finally, PGAA is a great opportunity to measure the chlorine content of archaeological objects in a non-destructive and precise way, and can be used as a control, if the conservation treatment was successful, and if the cultural heritage could be preserved by treatment.

Primary author: Prof. SCHMUTZLER, Britta (FH Erfurt)

Co-authors: REVAY, Zsolt (PGAA); STIEGHORST, Christian (TUM / FRM II)

Presenter: Prof. SCHMUTZLER, Britta (FH Erfurt)

Session Classification: Materials Science

Track Classification: Materials Science