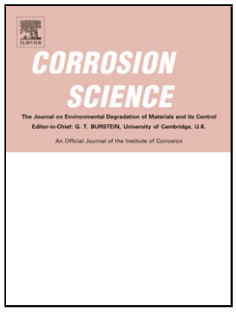

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Iron corrosion in archaeological context:

structural refinement of the ferrous hydroxychloride β-$Fe_2(OH)_3Cl$

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Highlights

- Precise determination of the structure of β-$Fe_2(OH)_3Cl$ on archeological marine artefact
- Novel XAS results, including fitting procedures of natural β-$Fe_2(OH)_3Cl$
- Novel XRD refinement of β-$Fe_2(OH)_3Cl$ from archeological context
- One of the rare demonstration of the DiffAbs beamline efficient original set up

Novelty Statement

In an experimental point of view, the results of the present paper were mainly obtained thanks to the original available set up of the DiffAbs beamline (SOLEIL Synchrotron). On this beamline it is indeed possible to study a wide variety of materials combining X-ray diffraction with X-ray absorption and fluorescence spectroscopies, in order to correlate the chemical and structural information. The samples are studied using these different techniques quasi simultaneously and especially keeping the same physico-chemical conditions during measurements. This possibility is crucial for the non-stable samples as the compound studied here, even if all precautions are taken to place the phase in an airtight environment. The