

Electronic Supplementary Material for “Corrosion Behaviour of L80 Steel Grade in Geothermal Power Plants in Switzerland”

Ana Vallejo Vitaller ^{1,*}, Ueli M. Angst ¹ and Bernhard Elsener ^{1,2}

¹ Institute for Building Materials (IfB), ETH Zurich, Stefano-Franscini-Platz 3, 8093 Zurich, Switzerland; ueli.angst@ifb.baug.ethz.ch (U.M.A.); elsener@ifb.baug.ethz.ch (B.E.)

² Department of Chemical and Geological Sciences, University of Cagliari, 09100 Monserrato (CA), Italy

* Correspondence: ana.vallejo@ethz.ch; Tel.: +41-44-633-2786

Received: 20 January 2019; Accepted: 7 March 2019; Published: date

Methods

For X-ray microanalysis, the used EDX system was a Genesis 4000 by EDAX (Mahwah, NJ, USA). A ZAF matrix correction mode was used for the semi-quantitative analysis. The XRD patterns were recorded at room temperature with a Bruker D8 Advanced diffractometer (Bruker AXS GmbH, Karlsruhe, Germany) in Bragg-Brentano geometry using Co-K α ($\lambda = 1.7902 \text{ \AA}$) radiation. The X-ray generator worked at a potential of 35 kV and a current of 40 mA. A 10–120° 2 θ scan range, a step size of 0.02° 2 θ and a time per step of 5 s were employed. Match! 3.6.2.121 Windows program (Crystal Impact, Bonn, Germany) was used for the phase identification of the samples. COD-Inorg REV208743 2018.07.02 database was used to assign the crystalline phases.

Additional results

SEM-EDX

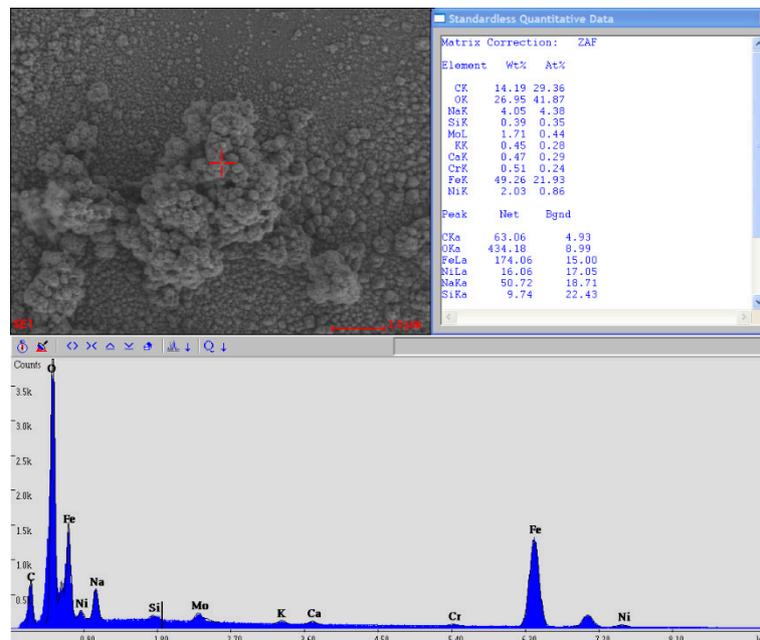


Figure S1. Point analysis of particles of the sample in fluid A at 100 °C: scanning electron microscopy (SEM)-secondary electron (SE) image, corresponding dispersive X-Ray (EDX) spectrum, and semi-quantitative elemental composition.

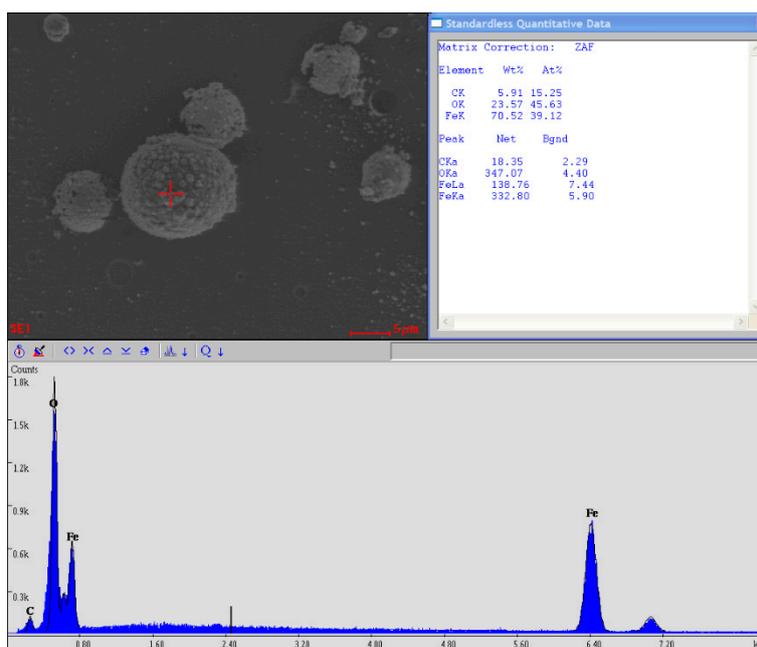


Figure S2. Point analysis of particles of the sample in fluid A at 200 °C: SEM-SE image, corresponding EDX spectrum, and semi-quantitative elemental composition.

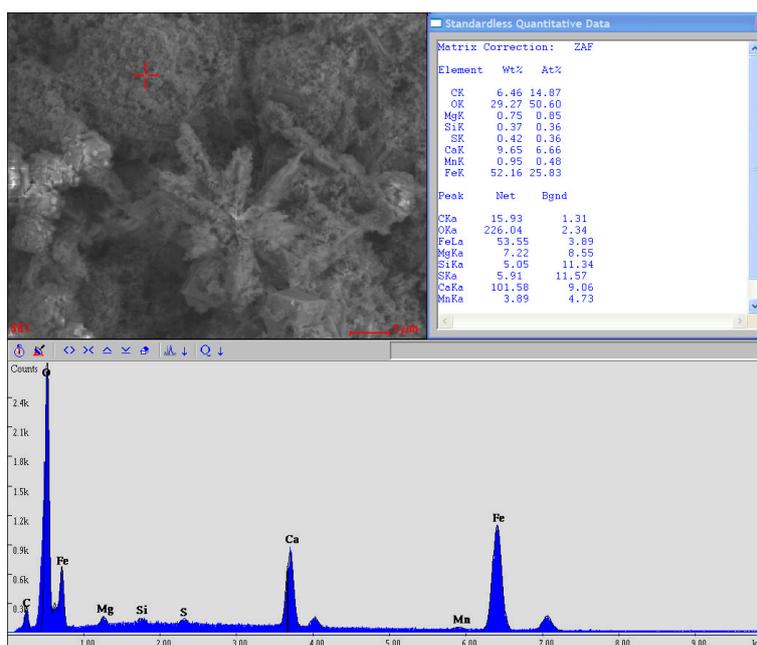


Figure S3. Point analysis of particles of the sample in fluid B at 100 °C: SEM-SE image, corresponding EDX spectrum, and semi-quantitative elemental composition.

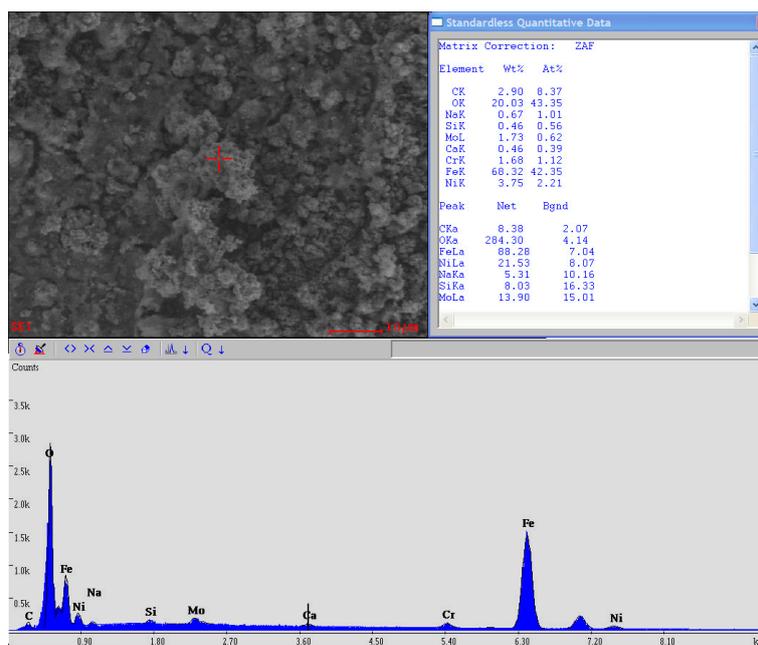


Figure S4. Point analysis of particles of the sample in fluid B at 200 °C: SEM-SE image, corresponding EDX spectrum, and semi-quantitative elemental composition.

XRD

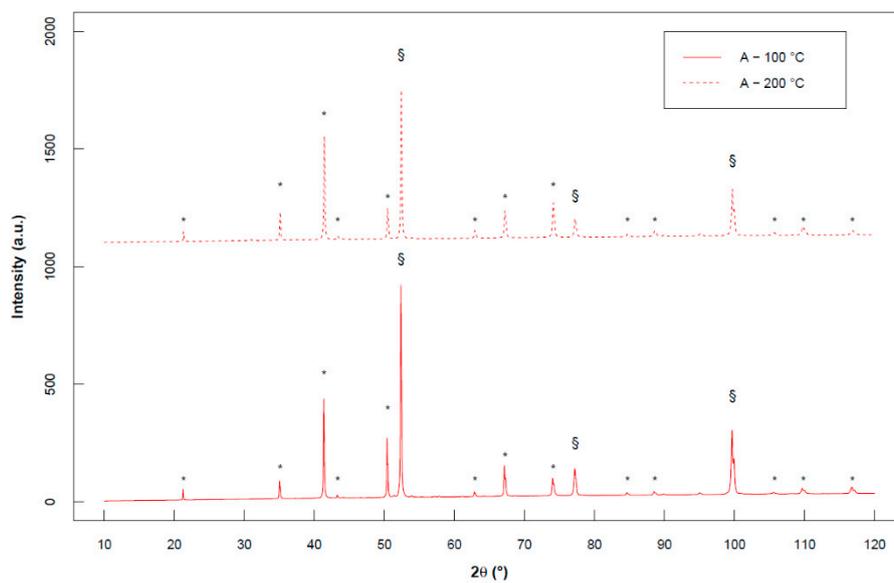


Figure S5. X-Ray diffraction (XRD) patterns of samples in fluid A at 100 and 200 °C. The peaks indicated by * are attributable to alpha-iron (entry 96-110-0109), whereas the peaks indicated by § are attributable to magnetite (entry 96-900-9769).

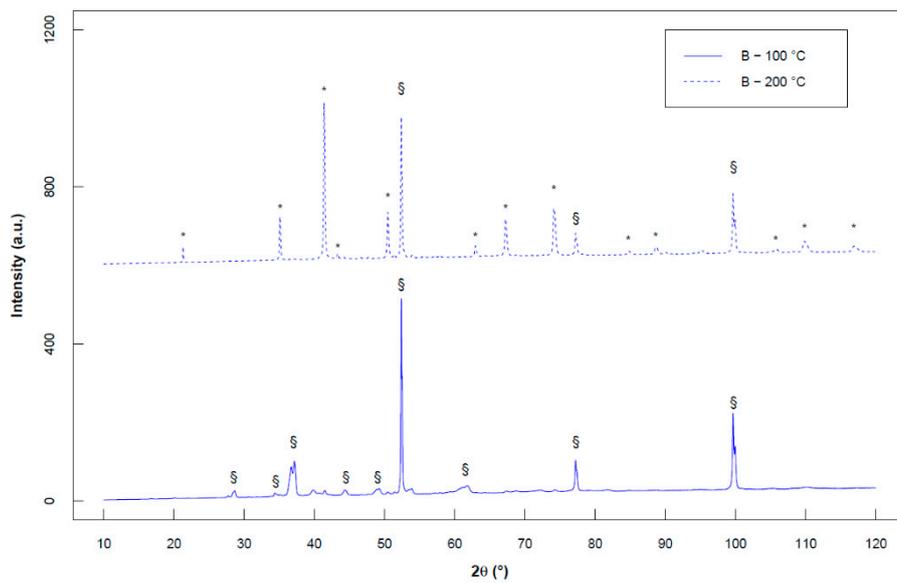


Figure S6. XRD patterns of samples in fluid B at 100 and 200 °C. The peaks indicated by * are attributable to alfa-iron (entry 96-110-0109), whereas the peaks indicated by § are attributable to magnetite (entry 96-900-9769).