

*Online Materials for*

**High-*P-T* phase relations of Al-bearing magnetite: Post-spinel phases as indicators for *P-T* conditions of formation of natural samples**

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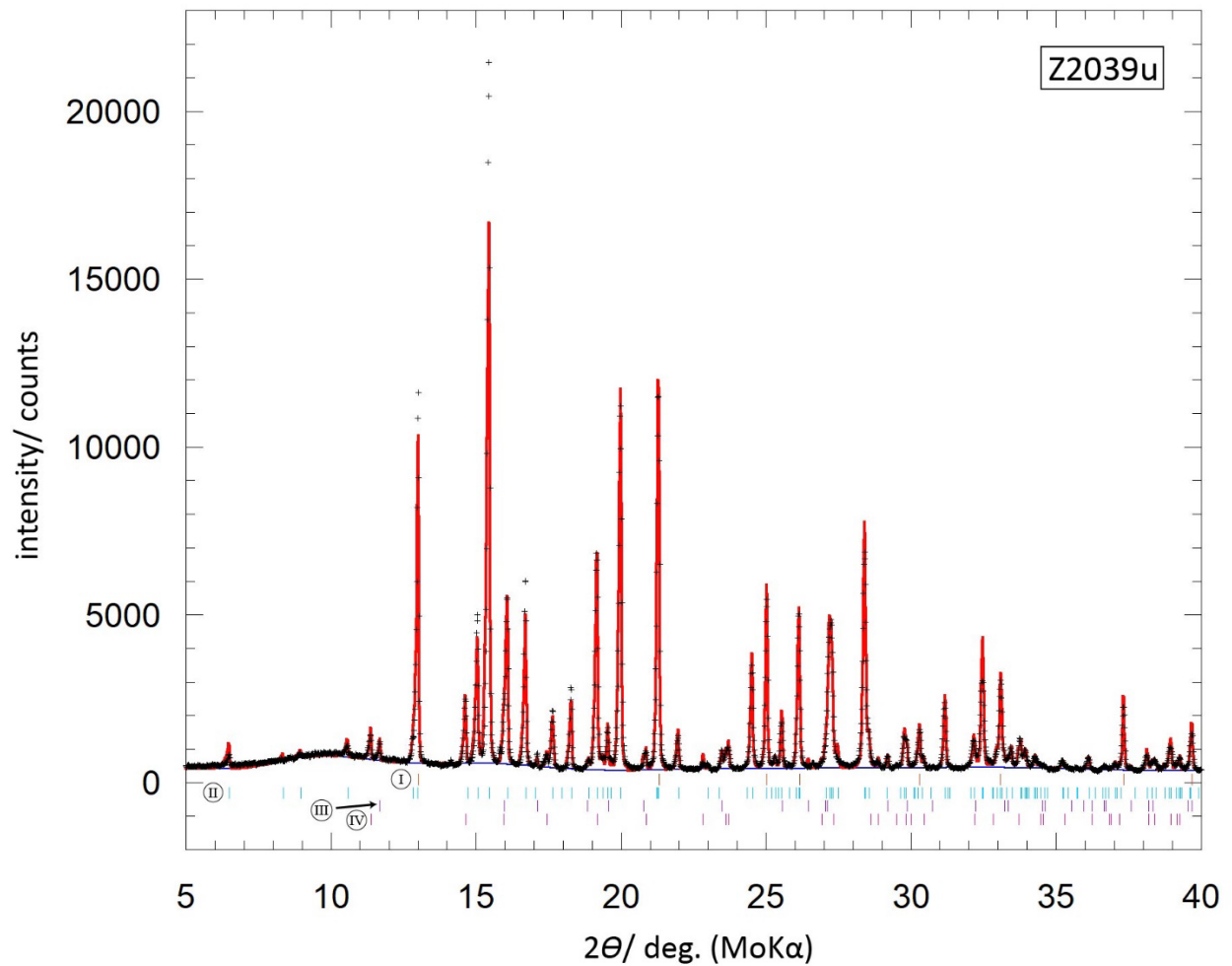
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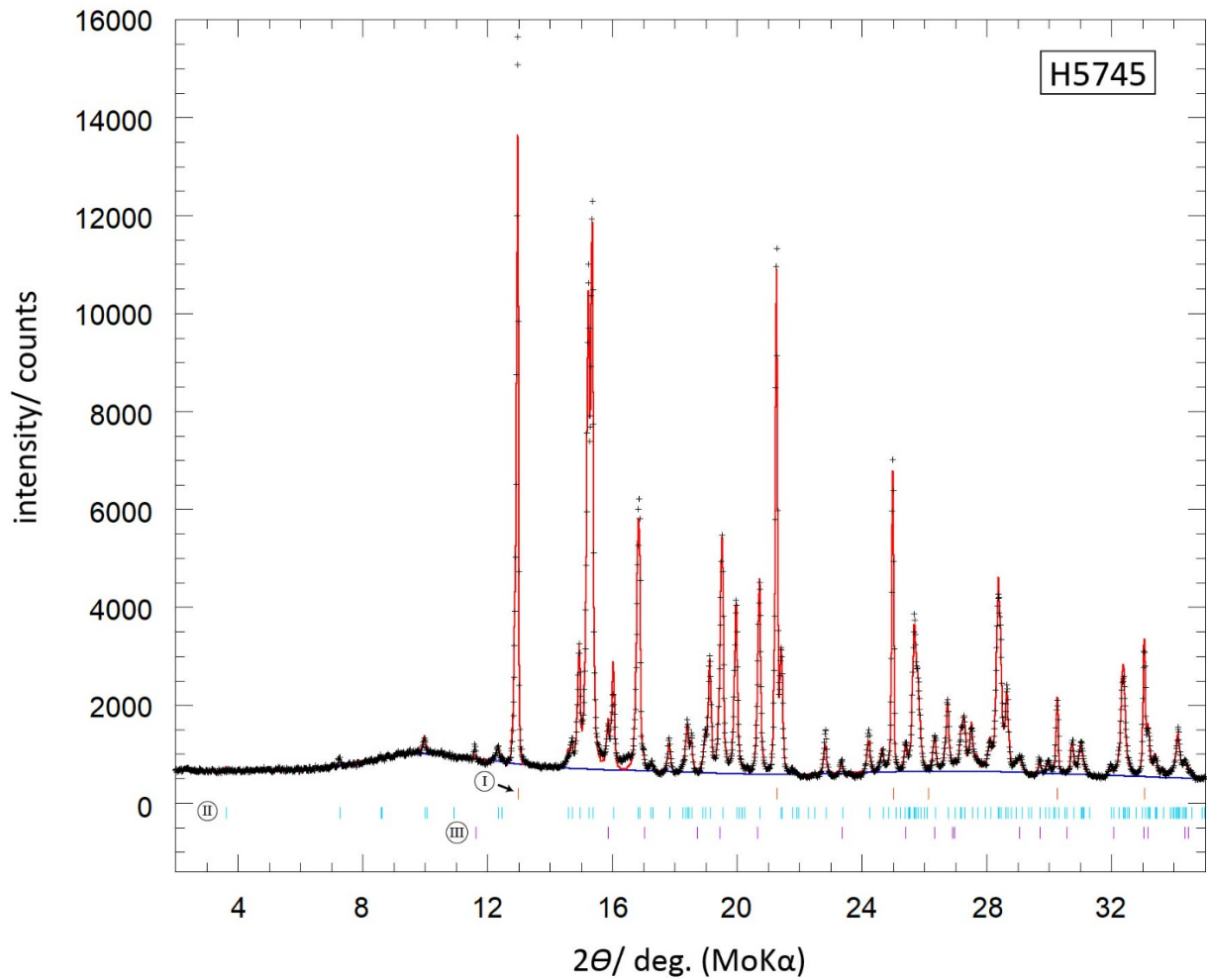
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**Figure OM1.** Powder X-ray diffraction pattern of the run products of experiment Z2039u. Black crosses and red solid curves are the observed and calculated X-ray diffraction profiles, respectively. The blue curve represents the fitted background. Vertical bars under the diffraction pattern indicate the peak positions for the individual phases. Brown (I): internal Si standard; Light blue (II):  $\text{CaFe}_3\text{O}_5$ -type structured  $\text{Fe}_2(\text{Fe,Al})_2\text{O}_5$  phase with the *Cmcm* space group; Purple (III):  $\text{Fe}^{3+}$ -bearing corundum phase. Pink (IV): siderite. In this case, siderite was detectable not only by electron microprobe but also in the diffraction pattern.



**Figure OM2.** Powder X-ray diffraction pattern of the run products of experiment H5745. Black crosses and red solid curves are the observed and calculated X-ray diffraction profiles, respectively. The blue curve represents the fitted background. Vertical bars under the diffraction pattern indicate the peak positions for the individual phases. Brown (I): internal Si standard; Light blue (II): monoclinic  $\text{Fe}_3(\text{Fe,Al})_4\text{O}_9$  phase with the  $C2/m$  space group. Note that the 001 reflection at  $2\theta = 3.629^\circ$  ( $d$ -spacing:  $11.159 \text{ \AA}$ ) is barely detectable, indicating that this reflection is clearly dependent on the phase composition. Purple (III):  $\text{Fe}^{3+}$ -bearing corundum.