

Synthesis of fayalite single crystals and physical property measurements

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We synthesized fayalite single crystals. Highly pure SiO₂ (99.99%) and Fe oxide (99.9%) reagents were melted in an Iridium crucible under N₂ atmosphere. After reagents were completely melted, the temperature of the crucible was gradually decreased to room temperature in 48h. Although the product contained magnetite and SiO₂, fayalite single crystals were crystallized in the lower part of the product. The size of fayalite crystal was 0.1 - 1mm. The lattice constants were $a=4.8247(3)$, $b=6.0908(3)$ and $c=10.4838(7)$. To determine the ferric and ferrous ratio of fayalite, we measured electron energy-loss spectroscopy (EELS). We will report the results of EELS.

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