Distribution and oxidation state of iron in olivine from olivine-basalt lava of Kuroshima volcano, Goto Islands, Japan
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Oxidation state and distribution of Fe in olivine from alkaline olivine-basalt lava in Kuroshima volcano, Goto Islands, Japan, were investigated. In the olivine-basalt, hematite occurs in the rim and fractures of olivine phenocrysts. By using Fe\textsubscript{Lβ}/Fe\textsubscript{Lα}-intensity ratios of olivine, the Fe\textsuperscript{2+}:Fe\textsuperscript{3+}-ratios of olivine were derived as 95(3):5(3)~1(3). A very small amount of Fe\textsuperscript{3+} at the M2 was also detected by \textsuperscript{57}Fe Mössbauer spectra of pure olivine sample. The site occupancies of Fe in the M1 and M2 refined by X-ray Rietveld analysis are 0.134 and 0.183 apfu, respectively. Thus, Fe\textsuperscript{3+}\textsubscript{M2} is derived as 0.01 apfu at maximum. The Kuroshima olivine-basalt is considered to have suffered high temperature oxidation.