

## The low-temperature Moessbauer spectroscopy of an M3' epidote from Osayama, Okayama prefecture, Japan

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Epidote,  $\text{Ca}_2(\text{Al,Fe}^{3+},\text{Fe}^{2+})\text{Al}_2\text{SiO}_4\text{Si}_2\text{O}_7(\text{O,OH})$  is a common rock forming mineral found low-grade metamorphic rocks. The chemical compositions of the epidote vary with the formation conditions and make some complex zoning textures. The distribution of  $\text{Fe}^{2+}$ - $\text{Fe}^{3+}$  ions in the crystal structure will be able to analyze by the Mössbauer spectrometry and the stability/unstability of the sample can be estimated from the distribution.

Moreover, in some sample, the Fe ions are distributed in the characteristic M3' site that can be detected by the Mössbauer spectroscopy. The distribution ratio of the Fe ions in the M3' site can not be estimated by the X-ray structure analysis, so the M3' sites are making a small ordering structures and distribute homogeneously in the crystal. Distribution ratio of Fe in the site of M1/M3/M3' corresponds to the formation conditions of the sample.

In this study, the low-temperature Mössbauer spectrum and Magnetic susceptibility of the M3' epidote sample was measured and the characteristics of the M3' site were analysed.

Keywords: Epidote, Moessbauer spectroscopy, M3' site, Magnetic susceptibility