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The spin structure of maghemite investigated by ^{57}Fe NMR
SEONG-JOO LEE, SOONCHIL LEE, Korea Advanced Institute of Science and Technology — Maghemite($\gamma\text{-Fe}_2\text{O}_3$) is a ferrimagnetic material known for a long time but its detailed spin structure is not fully understood yet. Interpretation of the hyperfine field measured by the Mössbauer study, which has been the main tool to study local spin structure of this material, has been controversial. Maghemite has an inverse spinel structure where magnetic Fe ions can occupy either the octahedral or the tetrahedral sites. The NMR spectrum shows two separate peaks in zero external field. We split these peaks clearly by applying external magnetic field and compared the peak intensities. The result shows that the hyperfine field at the nuclear spins in the octahedral site is larger than that in the tetrahedral site. The field dependence of the resonance frequency shows that the spins at the octahedral site are antiparallel with external field while those at the tetrahedral site are canted and parallel to external field.

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