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Coexistence of ferromagnetic and paramagnetic phases in $Ti_{0.995}\,^{57}Fe_{0.005}O_2$

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Abstract

$Ti_{0.995}\,^{57}Fe_{0.005}O_2$ compounds were fabricated using the chemical solution method. Room temperature magnetic hysteresis curve showed an obvious ferromagnetic behavior and the magnetic moment per Fe atom under the applied field of 1 T was estimated to be about 0.067 μ_B. Mössbauer spectra of $Ti_{0.995}\,^{57}Fe_{0.005}O_2$ showed that the ferromagnetic and the paramagnetic phases coexisted in all temperature ranges (14–300 K). The observed small magnetic moment was fundamentally attributable to paramagnetic phase as well as ferromagnetic phase.
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