

## Magnetic properties of $(\text{SrFe}_{12}\text{O}_{19})_x(\text{CaCu}_3\text{Ti}_4\text{O}_{12})_{1-x}$ composites

Eremina R., Sharipov K., Yatsyk I., Lyadov N., Gilmutdinov I., Kiiamov A., Kabirov Y., Gavriyachenko V., Chupakhina T.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### Abstract

© 2016, Pleiades Publishing, Inc. New composite materials  $(\text{SrFe}_{12}\text{O}_{19})_x(\text{CaCu}_3\text{Ti}_4\text{O}_{12})_{1-x}$  ( $x = 0, 0.05, 1$ ) have been synthesized. Their magnetic properties are studied in the temperature range 5–300 K using the magnetic resonance and magnetometry methods. It is found that strontium hexaferrite microinclusions in the  $(\text{SrFe}_{12}\text{O}_{19})_{0.05}(\text{CaCu}_3\text{Ti}_4\text{O}_{12})_{0.95}$  composite “magnetize”  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$  at temperatures from 300 to 200 K, forming a ferrimagnetic particle near the  $\text{SrFe}_{12}\text{O}_{19}$  “core.” The magnetic resonance line below 200 K splits into two lines corresponding to  $\text{SrFe}_{12}\text{O}_{19}$  and  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ . The core effect decoration is manifested in the increase in the Curie–Weiss temperature from 25 K in  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$  without the doping ceramics to 80 K in the composite with 5% of  $\text{SrFe}_{12}\text{O}_{19}$ .

<http://dx.doi.org/10.1134/S1063776116070177>

---