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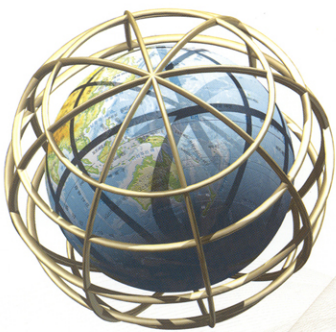

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Interaction Energy Changed by Substituting Potassium in Li-ferrites

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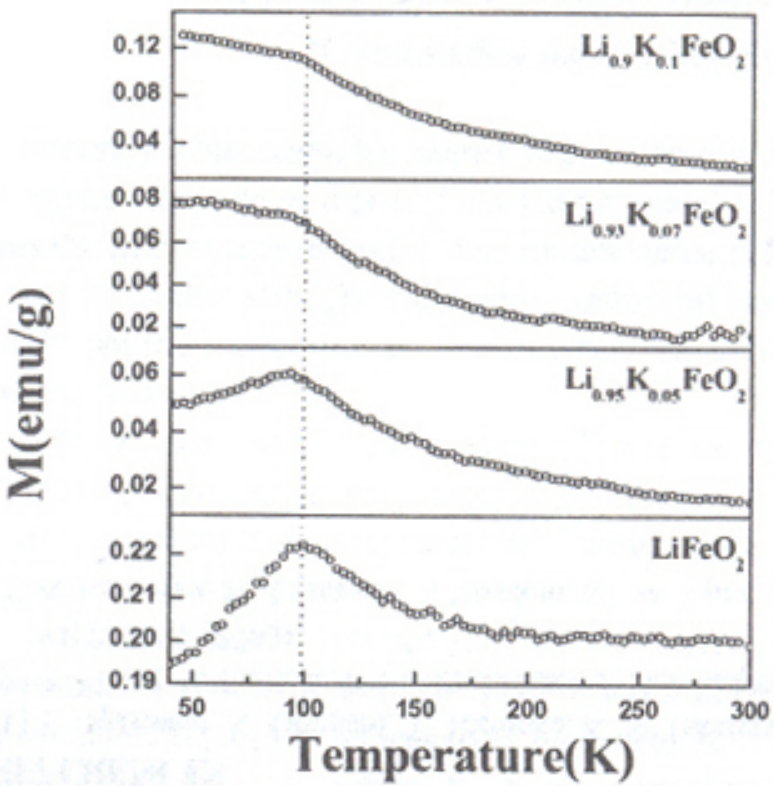

Fig. 1. Temperature dependence of magnetization of $Li_{1-X}K_XFeO_2$ in zero field-cooling(ZFC).

The commercial lithium battery has been studied vigorously power source for portable electronics. Lithium iron oxides has drawn much interests for the higher energydensity and the extended life cycle for applications. However crystallization of lithium iron oxide during has been the problem[1]. In this work, $Li_{1-X}K_XFeO_2$ powders have been prepared by a sol-gel method. Their crystallographic and magnetic properties fabrication process have been studied by X-ray diffraction (XRD), Mössbauer spectroscopy, and vibrating sample magnetometer (VSM) measurements. The single-phase of $Li_{1-X}K_XFeO_2$ is observed in the samples annealed at 650℃ for 3h in air atmosphere. The crystal structure of $Li_{1-X}K_XFeO_2$ is found to be cubic structure of *Fm3m* with its lattice constants $a_0 = 4.161$ Å by Reitveld refinement. The VSM measurements were performed in the temperature range from 40 to 300 K, which was finded the Néel temperature ($T_N = 97\ K \pm 5\ K$). Magnetic behaviour was changing from the antiferromagnetic property to the ferrous property with increasing potassium concentration as shown in Fig. 1. By the SEM measurment, We have observed uniform distribution of grains with spherical shape. The paticle size of the powders show that it decreases with increasing potassium concentration.

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[2] S. Y. An, I. B. Shim, C. S. Kim, J. Magn. Magn. Mater. 290, 1551 (2005).