

## Effect of nonstoichiometric aluminum composition on magnetic properties of Fe<sub>2</sub>VAl system

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Heusler-type Fe<sub>2</sub>VAl compound shows semiconductor-like conductivity up to 1300 K and is known as a semimetal with a pseudo-gap at the Fermi level. Magnetic susceptibility of Fe<sub>2</sub>VAl shows a Curie-Weiss-like behavior whereas band calculations tell that Fe<sub>2</sub>VAl is nonmagnetic. The magnetic moment in Fe<sub>2</sub>VAl arises from magnetic Fe cluster, caused by a wrong occupation of V sites by Fe atoms, with a localized nature. Recently, however, Sato *et al.* reported that itinerant ferromagnetic behavior of Fe<sub>2</sub>VAl<sub>0.95</sub> with Curie temperature  $T_c = 33$  K.<sup>1</sup> They suggested that the Al site with Fe and V atoms results in itinerant ferromagnetism with a low carrier density.

In this study, we have prepared polycrystalline samples of Fe<sub>2</sub>VAl<sub>1±δ</sub> ( $\delta < 0.06$ ) with nonstoichiometric aluminum composition and measured magnetization by a SQUID magnetometer to clarify the critical composition of Al to induce itinerant magnetism. With decreasing Al composition up to  $\delta = -0.03$ , both Curie temperature and susceptibility at 5 K increased and then decreased below  $\delta = -0.04$ .

<sup>1</sup>K. Sato *et al.*, Phys. Rev. B **82**(2010)104408.