

Abstract Submitted  
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**Magnetic and charge carriers properties of metamagnetic Fe<sub>3</sub>Ga<sub>4</sub>**  
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DITUSA<sup>5</sup>, Louisiana State University — Single crystals of Fe<sub>3</sub>Ga<sub>4</sub> were grown via an  
iodine vapor transport method. Previous investigations of arc-melted polycrystalline  
samples identify metallic conduction with a magnetic phase transition at 400 K and  
interesting temperature-dependent metamagnetic behavior. The single crystal sam-  
ples allow a much fuller exploration of the magnetic properties and have yielded  
some interesting differences with the previous data. This includes a sharp reduction  
of the magnetization within the magnetically ordered phase associated with a sharp  
onset of the metamagnetic behavior in the field dependence near room temperature.  
A previously identified second phase transition occurs below 50 K where the metam-  
agnetic behavior is replaced by a ferromagnetic magnetization with little hysteresis.  
We find substantial anisotropy in the magnetization which is particularly apparent  
between 50 and 300 K. Charge transport experiments are underway to explore the  
magneto-resistance and Hall effect of this magnet.

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