

First Pnictide SQUID with Grain-Boundary Junctions

July 23, 2010 (HP34). Following the recent development of pnictide epitaxial films, Lee *et al.* reported that bicrystal grain boundaries with large misorientation angles drastically suppress the critical current density, J_c , in BaFe₂As₂:Co epitaxial films grown on SrTiO₃ bicrystal substrates [1]. Subsequently, Katase *et al.* demonstrated the first pnictide grain boundary (GB) junctions, exhibiting RSJ-type characteristics [2]. Now, the same group of authors from three collaborating institutions reported the first dc functioning dc SQUID fabricated using such junctions. The authors attributed the rather high flux noise, of $7.8 \times 10^{-5} \Phi_0/\text{Hz}^{1/2}$ above 20 Hz, to the small voltage modulation depth ($\Delta V = 1.4 \mu\text{V}$), which resulted from the superconductor–normal-metal–superconductor (SNS) junction nature of the bicrystal grain boundary. The SNS behavior is manifested by the steep temperature dependence of I_c and the rather low junction resistance due to the metallic nature of the normal-state BaFe₂As₂:Co. This work appeared in the last *SuST* issue as a Rapid Communication [3] and is thus accessible free-of-charge. Accordingly, the full text can be found at: <http://iopscience.iop.org/0953-2048/23/8/082001>.

[1] S. Lee *et al.*, *Appl. Phys. Lett.* **95** 212505 (2009).

[2] T. Katase, Y. Ishimaru, A. Tsukamoto *et al.*, *Appl. Phys. Lett.* **96**, 142507 (2010).

[3] T. Katase, Y. Ishimaru, A. Tsukamoto *et al.*, *Supercond. Sci. Technol.* **23**, 082001 (2010).