

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Epitaxial thin films of heavy-Fermion superconductor CeCoIn₅ T. SHIBAUCHI, H. SHISHIDO, K. YASU, Y. MIZUKAMI, T. TERASHIMA, Y. MATSUDA, Kyoto University, Kyoto, Japan — Experimental studies of heavy-Fermion superconductors have been mainly concentrated in measurements using bulk crystals so far. Thin film fabrication process is a key to open new approaches to study fundamental physics, such as phase-sensitive measurements of order parameter using Josephson junctions, and controlling dimensionality of heavy Fermions by superlattices. Despite several attempts using different techniques and various substrates [1-3], epitaxial growth of Ce-based heavy-Fermion superconductors has been a challenging issue. Here we report on the first successful growth of epitaxial thin films of heavy-Fermion superconductor CeCoIn₅. By the combination of a ultra-high vacuum deposition technique using molecular beam epitaxy and the choice of proper substrate material with very good lattice matching with CeCoIn₅, we are able to fabricate epitaxial films whose transport properties reproduce the characteristic features of the bulk CeCoIn₅, including a sharp superconducting transition at 2.3 K. [1] O. K. Soroka *et al.*, J. Phys.: Condens. Matter **19**, 056006 (2007). [2] M. Izaki *et al.*, Appl. Phys. Lett. **91**, 122507 (2007). [3] A. G. Zaitsev *et al.*, Physica C **469**, 52 (2009).

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Date submitted: 19 Nov 2009

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