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HIgh pressure magnetic measurements on strongly correlated electron systems with miniature ceramic anvil high pressure cell
NAOYUKI TATEIWA, YOSHINORI HAGA, TATSUMA MATSUDA, ETSUJI YAMAMOTO, Advanced Science Research Center, Japan Atomic Energy Agency, ZACHARY FISK, University of California — We have designed a miniature ceramic anvil high pressure cell (mCAC) for magnetic measurements at pressures up to 12.6 GPa in a commercial superconducting quantum interference (SQUID) magnetometer [N. Tateiwa *et al.*, Rev. Sci. Instrum. **82**, 053906 (2011)., ibid. **83**, 053906 (2012)]. The simplified mCAC without anvil alignment mechanism is easy-to-use for researchers who are not familiar with high-pressure technology. The production cost is about one tenth of that of the diamond anvil cell (DAC). Recently, the background magnetization in the mCAC was significantly reduced, enabling more precise magnetic measurements at low temperatures. In this conference, we will shows our recent modifications in the mCAC and experimental results on rare earth compound $YbCu_2Si_2$. $YbCu_2Si_2$ is a paramagnetic compound at ambient pressure. The pressure-induced phase has been suggested above 8 GPa by previous studies with the ac magnetic susceptibility and the heat capacity measurements. We confirm the spontaneous dc magnetization in the pressure-induced ferromagnetic phase by the dc magnetic measurement. We have studied the anisotropy in the magnetic property in the pressure-induced phase around 11 GPa and found that the phase has the strong Ising-type uniaxial anisotropy.

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