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Studies of vortex lattice in $PrOs_4Sb_{12}$ by scanning tunneling spectroscopy

S. Kaneko[1], M. Furuyama[1], H. Sugawara[2], Y. Aoki[3], H. Sato[3] and N. Nishida[1]

[1]Department of Physics, Tokyo Institute of Technology, Tokyo, 152-8551
[2]Faculty of Integrated Arts and Sciences, Tokushima University, Tokushima 770-8502
[3]Graduate School of Science, Tokyo Metropolitan University, Hachioji, 192-0397

A filled skutterudite compound $PrOs_4Sb_{12}$ is the first Pr-based heavy-fermion superconductor. The physical properties have been intensively studied and the unconventional superconductivity has been reported by many experiments. We have performed scanning tunneling microscopy (STM) and spectroscopy (STS) measurements on $PrOs_4Sb_{12}$. STM/STS is able to measure surface structures on an atomic length scale and the local density of states of quasiparticles on the surface. In the STM/STS study it is important to prepare a clean surface. We prepared a sample surface by cracking a single crystal at liquid helium temperature. On this surface we have observed topographic images which represent a crystal structure of $PrOs_4Sb_{12}$. We have applied magnetic fields parallel to the [001] direction and have succeeded in observing vortex lattices at 0.40K. We will discuss the shape of vortex lattice and the orientation relative to the crystal axis.