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特集：これからの微小重力実験機会
（解説）

USERSを利用した高温超電導バルクの製造実験

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USERS Experiments to Fabricate High Temperature Bulk Superconductors

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Abstract

Fabrication of large high temperature bulk superconductors has a great impact on various industrial applications. However, it has been difficult to grow a large grain bulk on the ground due to the contamination from the substrate or the crucible. This problem can be solved in microgravity environment, in which the bulk can be supported by a seed crystal alone during the crystal growth. Such experiments were conducted in the USERS (Unmanned Space Experiment Recovery System) project. Unfortunately, we could not grow large bulk superconductors in space. However, through this project we learned several interesting features for processing of bulk superconductors, which led to the discovery of a new practical method to produce large bulk superconductors on the ground. This achievement will allow us to find new industrial applications of bulk superconductors.