

MICROGRAVITY SCIENCES AND PROCESSES (A2)  
Microgravity Sciences onboard the International Space Station and Beyond (6)

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HIGH QUALITY PROTEIN CRYSTAL GROWTH EXPERIMENT ONBORD “KIBO”

**Abstract**

Our goal is to contribute to yielding results which meet the social requirements. Protein crystallization experiment in space environment has been performed for more than 20 years. Japan Aerospace Exploration Agency (JAXA) has conducted protein crystallization experiment in International Space Station (ISS) since 2003. In this project, totally over 300 protein samples were launched by Russian space transportation system and JAXA developed the technology to obtain the high quality crystals in space. JAXA also established user-friendly support service system for users to apply to the space experiment easily. Japanese experiment module “Kibo” (JEM) was assembled ISS in 2008 and now being used. JAXA started new protein crystallization experiment “High Quality Protein Crystal Growth Experiment (JAXA PCG)” in JEM from 2009. Six space experiments will be conducted in every six months. The protein samples will be transported by Russian Progress Spacecraft to the ISS in cooperation with Federal Space Agency (Russia) and will be placed in the Protein Crystallization Research Facility (PCRF) in JEM for 2-4 months. The experimental opportunities will be provided for commercial users who want to get the results exclusively, for Japanese national project targeting the biological protein molecules to clarify diseases and life phenomenon, for JAXA strategic mission to get results through the space experiment, for technical development to crystallize membrane protein and protein-ligand complex and for international cooperation for Russian user and Asian nations such as Malaysia. In first experiment 47 samples were launched on July 24th and landed on Oct. 11th in 2009. In second experiment 55 samples were launched on Feb. 3rd and will land on Jun 2nd. In this presentation the latest results are introduced. Some crystals obtained in space showed the high resolution data to contribute greatly to designing new drug or new functional catalyst.