

MPAC&SEED experiment on the International Space Station

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The assembly of the first Japanese manned space facility; the Japanese Experiment Module Kibo was launched and attached to the International Space Station (ISS). The Exposed Facility will be also launched and attached to the ISS in the next year. The Space Environment Data Acquisition equipment (SEDA), which is attached to the Kibo Exposed Facility, is a sensor assembly. The mission of the SEDA is to measure the space environment (neutrons, high-energy light particles, heavy ions, cosmic dust, atomic oxygen, plasma.) and environmental effects on materials and electronic devices to investigate the interaction with and from the space environment at Kibo's Exposed Facility. The data acquired by the SEDA will be useful for space equipment design, space-related scientific research, ISS operation and space weather forecasting. The Micro-Particles Capturer and Space-Environment Exposure Device (MPAC&SEED) is one of the sensors which is the experiment on particle capture and space exposure of material mounted on an aluminum tray. After exposure in space environment, MPAC&SEED Sample Assy is retrieved to the earth and the samples are evaluated. The MPAC has two functions. One is capturing space debris and micro-meteoroids having 0.001-0.1 mm diameter (Sample Unit 1) and the other is measuring these flux on orbit (Sample Unit 2). Silica-aerogel is used for MPAC on Sample Unit 1 in order to capture micro-particles with minimum damage. Gold plate is used for MPAC on Sample Unit 2 to investigate the flux of impacts on it. In this presentation, the experiment overview of MPAC&SEED on the Kibo Exposed Facility and another MPAC&SEED flight results, which was placed on the exterior of the Russian Service Module (SM) of ISS are described.