

1. Experiment Title

Crystal Growth of Alloy Semiconductor Under Microgravity

2. Principal Investigator

Yuko Inatomi, Associate Professor, Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA)

3. Outline of Experiment

The purpose of the present research project is to make clear the factors for crystal growth of a high-quality bulk alloy semiconductor by investigating (1) solute transport in liquid and (2) surface orientation dependence of growth kinetics under microgravity and terrestrial conditions.

The temperature gradient furnace GHF is used for the growth of an $\text{In}_x\text{Ga}_{1-x}\text{Sb}$ bulk crystal which is a potential substrate material of optoelectronic devices such as thermo-photo-voltaic cells and gas sensors, since the band gap and the lattice constant of the crystals are tuned by adjusting the composition. If the homogeneous and high-quality bulk crystal with desired composition can be grown based on the results of the space experiment, the knowledge to grow suitable thin layers on the crystal will be achieved for fabrication of the optoelectronic devices.

4. Experiment Facility

Gradient Heating Furnas (GHF),

