

||||| 特集：航空機を利用した微小重力実験（その2） |||||  
(解説)

## 航空機や落下施設を使用した微小重力での結晶成長 “その場観察”

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### ***In Situ* Observation of Crystal Growth Processes under Microgravity, Using Aircraft and Drop Facility**

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#### **Abstract**

Unique *in situ* observations using an aircraft or a drop facility have been developed in Japan for the crystallization experiments under microgravity. This is because of the limited facilities in Japan for longer duration of microgravity experiments. Interferometry and phase sensitive microscopy have widely been employed for the crystal growth experiments not only from aqueous solution phases but also from melt or gases at elevated temperature as high as 1900°C. Microgravity was found to reduce the nucleation rate of crystals considerably, because of much less heterogeneous nucleation. Cosmic materials from melt have been synthesized under microgravity for the first time. Natural textures and chemical variations of cosmic materials have successfully been synthesized when microgravity or levitation method has been adopted. This is due to the very large supercooling obtained only when no crucible or holders for the melt or the solution has been used. In order to employ the interferometry more efficiently in extreme conditions, a super-miniaturized interferometer ( $12\phi$ ) has been developed.