

## Organic analysis of micrometeoroids captured in the TANPOPO mission

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TANPOPO, dandelion is astrobiological research mission, which is analyses of interplanetary migration of microbes, organic compounds and meteorides, at the Exposed Facility on the Japanese Experiment Module (JEM) 'KIBO' on the International Space Station (ISS). One of the mission programs is a capture of micrometeorides using an ultra low-density aerogel. More than 10,000 t micrometeorides falls on the earth every year. Most of micrometeorides are thought as organic rich particles, although the carbonaceous chondrites are rare among meteorites. Therefore, the micrometeorides are important source materials for the origin of life on the earth. Our purpose in the program is determination of abundance and composition of organic compounds in the micrometeorides in order to understanding the origins of life.

Each micrometeoride is a very small and low weight particle. Therefore, usual wet chemistry is very difficult to use for the analyses, and microscopic procedures should be developed. Organic compounds in the captured particles from comet 81P/Wild 2 by Stardust spacecraft were analyzed by L<sup>2</sup>MS, TOF-SIMS (Static SIMS), nano-SIMS (Dynamic SIMS), STXM/XANES, microscopic FT-IR, microscopic Raman, FD-HPLC-MS. Then, they found polycyclic aromatic hydrocarbons (PAHs), amide, carbonyl, and nitrile compounds, etc. In addition, some organic compounds have an interstellar/protostellar heritage by the presence of deuterium and nitrogen-15 excesses. Furthermore, we would like to determine a occurrence of organic compounds of closer to origin of life than PAHs.

Now, we are preparing to analyze the organic compounds in the micrometeorides, using a model meteoritic particles captured in the ultra low-density aerogel by a two-stage light gas gun. We obtained the first results by microscopic FT-IR, microscopic Raman and amino acids analysis. SIMS analysis which showed a very effectiveness by the structure analysis of the lignin is also started.