

W0464

JAXA-GCF Project: High-Performance Protein Crystallization in Space. M. Sato^{a*}, H. Tanaka^b, K. Inaka^c, S. Shinozaki^b, A. Yamanaka^b, S. Takahashi^b, M. Yamanaka^b, E. Hirota^b, S. Sugiyama^c, M. Kato^a, C. Saito^a, S. Sano^a, M. Motohara^a, T. Nakamura^a, T. Kobayashi^a, T. Tanaka^a, ^aJapan Aerospace Exploration Agency, Ibaraki, 305-8505 JAPAN, ^bJapan Space Forum, Tokyo, 100-0004 JAPAN, ^cMaruwa Food Industries, Inc., Nara, 639-1123 JAPAN.

Japan Aerospace Exploration Agency (JAXA) has conducted the project (JAXA-GCF) for obtaining high-quality protein crystals twice a year since 2003. In this project, we have provided user-friendly experimental frame work, from optimization of crystallization condition to X-ray diffraction data collection. In technical point of view, we contrived gel-tube method for experimental device [1] based on the counter-diffusion crystallization technique [2], and provided techniques for harvesting and cryoprotecting crystals before X-ray diffraction experiment for users. As a result, the success rate of the crystallization, mostly resulting in an improvement of the maximum resolution, has become increased, including some atomic-resolution crystals. In the near future, space experiment could be essential especially for obtaining atomic resolution crystals which will become significant for the drug design.

[1] Tanaka, H. et al., J. Synchrotron Rad, 2004, 11, 45-48.

[2] Garcia-Ruiz, JM., Moreno, A., Acta Cryst., 1994, D50, 484-490