

## Poster Presentation

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### *A new protein crystal mounting method using humid air and glue coating*

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Cryopreservation of protein crystals are a useful to reduce radiation damage for synchrotron experiments, the cryoloop mounting method using cryoprotectant agents is the widely used. However, Protein crystals are fragile, and they have often trouble to find a condition suitable for cryo-cooling. X-ray diffraction experiments at room temperature can evaluate the quality of the protein crystal and perform structural analysis without being affected shrink of the crystal by cryo-cooled and addition cryoprotectant agents. And, conventional humidity controlled method is possible to improve resolution of limited protein crystals [1]. However, protein crystals of these diffraction experiments cannot apply same mounting method. We developed a new crystal mounting method, the humid air and glue-coating (HAG) mounting method, which involves a combination of controlled adjustable humid air and water-soluble polymer glue for crystal coating [2]. By coating with the water-soluble polymer glue, most crystals exposed to the controlled humid air were stable at room temperature and could be cryocooled under optimized humidity without additional cryoprotectant agents. For example, the crystals of the bacterial hydrolase RsbQ was mechanically very fragile and sensitive to environmental changes. Thus, RsbQ crystal cannot apply cryoloop mount with cryoprotectant agents. By using the HAG method, we were able to obtain 1.4 Å data and solve its structure. For another example, membrane protein crystal was improved resolution to optimize humidity. The crystals by using HAG method reproducibly showed crystal lattice transformation in response to a change in humidity, thus using this method a series of isomorphous crystals can be prepared. We introduce HAG method, and demonstrate its success with various protein crystals.

[1] R. Kiefersauer, M. E. Than, H. Dobbek, et al. *J. Appl. Cryst.*, 2000, 33, 1223–1230, [2] S. Baba, T. Hoshino, L. Ito, et al. *Acta Cryst.*, 2013, D60, 1839–1849

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