

Poster Presentation

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Visualizing soaking process of protein crystal

R. Mizutani¹, Y. Shimizu¹, R. Saiga¹, G. Ueno², Y. Nakamura³, A. Takeuchi⁴, K. Uesugi⁴, Y. Suzuki⁴

¹*Dept of Applied Biochemistry, Tokai University, Kanagawa, Japan,* ²*RIKEN SPring-8 Center, Hyogo, Japan,* ³*Rigaku Corporation, Osaka, Japan,*

⁴*Research and Utilization Division, JASRI/SPring-8, Hyogo, Japan*

Time-resolved visualization of the soaking process of tetragonal lysozyme crystal was performed by synchrotron radiation microtomography. Mother liquor containing hexachloroplatinate was introduced into a capillary bearing lysozyme crystals to visualize crystals undergoing soaking. The platinum distribution was first observed in the superficial layer of crystal and then gradually penetrated into the crystal core. The crystal structure of the platinum derivative in each soaking period was determined by time-resolved crystallography. A total of five platinum sites were identified in Bijvoet difference maps. These sites were classified into two groups on the basis of the time dependence of electron density development. A soaking process model consisting of binding-rate-driven and equilibrium-driven layers is proposed to describe the results. This study suggests that the structures of soaked crystals vary depending on the crystal position from which diffractions were taken.

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