

Abstract Submitted
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Biomimetic Calcium Phosphate Crystallization: Synchrotron X-ray Studies¹ AHMET UYSAL, BENJAMIN STRIPE, PULAK DUTTA, Physics and Astronomy, Northwestern University, BINHUA LIN, MATI MERON, CARS, The University of Chicago — The nucleation and growth of calcium phosphate by organic templates attract great attention due to its relevance to bone biomineralization. In spite of the vast studies in the field, the role of the organic templates in the process is still not well understood. One reason for this drawback is the lack of experimental tools to probe the organic template structure during the process. We studied the nucleation and growth of calcium phosphate under floating Langmuir monolayers, at the air/water interface, using two complementary X-ray scattering methods. We show that Grazing Incidence X-ray Diffraction (GID) and Grazing Incidence X-ray off-Specular Scattering (GIXOS) can reveal the organic-inorganic interface properties *in situ*. By using GID and GIXOS together, we can simultaneously determine the lateral interface structure and the electron density profile normal to the interface. Combined with *ex situ* methods, these techniques can improve our understanding of the role of the organic template during biomineralization.

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