

Abstract Submitted
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Optimization of radiation damage to proteins using X-ray nanofocusing optics¹ SELWA BOULARAOUI, KUSTAR - Khalifa University, K. EVANS-LUTTERODT, BNL-NSLS, S. LEE, A.F. ISAKOVIC, KUSTAR - Khalifa University — The need to understand protein structure and perform treatment lead to the use of X-ray and particle-based radiation. Since the use of such radiation has undesirable side effects, mostly through the damage to proteins, it is important to continuously work on decreasing radiation damage. We outline the proposal to use the kinoform refractive optics to focus X-rays on the nanoscale to minimize the radiation damage to protein crystals under study. These optics devices are nanofabricated from low-Z elements (silicon, diamond) and can be used at synchrotron X-ray radiation facilities. We discuss the automated setup that performs nanopositioning of the nanofocusing element, and collects the chemical and structural protein solution under study. We offer simple mathematical models in irradiation and in treatment that help optimize the radiation parameters.

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