By deconvoluting the experimentally found artificial half width with the effect caused by the pulse-to-pulse wavelength fluctuations of the FLASH radiation, we calculate a mean size of the powder grains of L = 200 nm by using Scherrer's formula. This again determines only a lower limit of periodical assemblies contributing to the Bragg diffraction pattern (see Fig. S1).

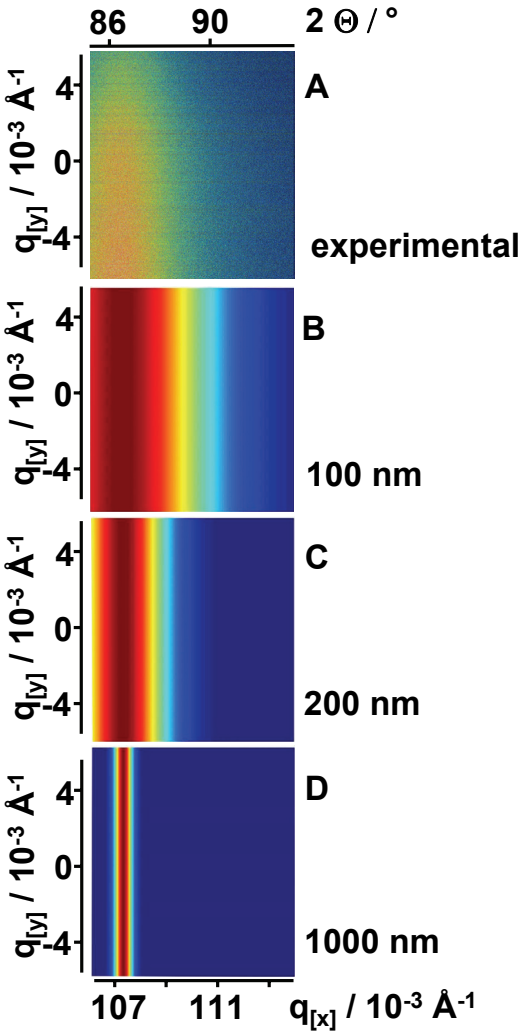

FIGURE S1: A) Recorded Debye-Scherrer ring. B) to D) Simulations of powder diffraction ring for various grain size distributions: (B) 100 nm, (C) 200 nm and (D) 1000 nm.