

Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

High-resolution Fluorescence Imaging with X-ray Free-electron Pulses¹ PHAY HO, CHRISTOPHER KNIGHT, STEPHEN SOUTHWORTH, KAI LI, GILLES DOUMY, LINDA YOUNG, Argonne Natl Lab — Intensity correlation of x-ray fluorescence, based on the principle introduced by Hanbury Brown and Twiss, has been proposed for high-resolution imaging of a 3D arrangement of atoms. To explore the applicability of this imaging approach, we theoretically investigate fluorescence dynamics of non-periodic systems subject to femtosecond XFEL pulses over a range of pulse parameters from the linear to non-linear x-ray absorption regimes. In particular, we present the fluorescence intensity correlation computed from the angular distribution of the fluorescence patterns and discuss the impact of sample damage on retrieving high-resolution structural information and elemental contrast in heterogeneous systems.

¹This work was supported in part by the U.S. Department of Energy, Office of Science, Basic Energy Sciences, Division of Chemical Sciences, Geosciences, and Biosciences under Contract No. DE-AC02-06CH11357.

Phay Ho
Argonne Natl Lab

Date submitted: 30 Jan 2020

Electronic form version 1.4