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**Carbon Condensation during High Explosive Detonation with Time Resolved Small Angle X-ray Scattering**[1] JOSHUA HAMMONS, MICHAEL BAGGE-HANSEN, MICHAEL NIELSEN, LISA LAUDERBACH, RALPH HODGIN, SORIN BASTEA, LARRY FRIED, CHADD MAY, Lawrence Livermore Natl Lab, NICHOLAS SINCLAIR, Washington State University, BRIAN JENSEN, RICK GUSTAVSEN, DANA DATTELBAUM, ERIK WATKINS, MILLICENT FIRESTONE, Los Alamos National Laboratory, JAN ILAVSKY, Advanced Photon Source, Argonne National Laboratory, TONY VAN BUUREN, TREVOR WILLEY, Lawrence Livermore Natl Lab, LAWRENCE LIVERMORE NATIONAL LAB COLLABORATION, LOS ALAMOS NATIONAL LABORATORY COLLABORATION, WASHINGTON STATE UNIVERSITY/ADVANCED PHOTON SOURCE TEAM — Carbon condensation during high-energy detonations occurs under extreme conditions and on very short time scales. Understanding and manipulating soot formation, particularly detonation nanodiamond, has attracted the attention of military, academic and industrial research. An in-situ characterization of these nanoscale phases, during detonation, is highly sought after and presents a formidable challenge even with today's instruments. Using the high flux available with synchrotron X-rays, pink beam small angle X-ray scattering is able to observe the carbon phases during detonation. This experimental approach, though powerful, requires careful consideration and support from other techniques, such as post-mortem TEM, EELS and USAXS. We present a comparative survey of carbon condensation from different CHNO high explosives.

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