Structural evolution of detonation carbon in Composition B-3 by X-ray scattering

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Here, we report initial experiments employing time-resolved X-ray scattering measurements to monitor the detonation carbon products formed from Composition B-3 (60% TNT, 40% RDX). Time-resolved SAXS (TRSAXS) studies were performed at the Dynamic Compression Sector (DCS, Sector 35) at the Advanced Photon Source (Argonne National Laboratory). In-situ formation of solid carbon behind the detonation front was probed on the nanosecond time scale. Analysis of the scattering patterns using model independent methods (Porod and Guinier) yielded insights into particle morphology and interfaces.