Supplemental Information: Revealing nanoscale dynamics during an epoxy curing reaction with X-ray photon correlation spectroscopy

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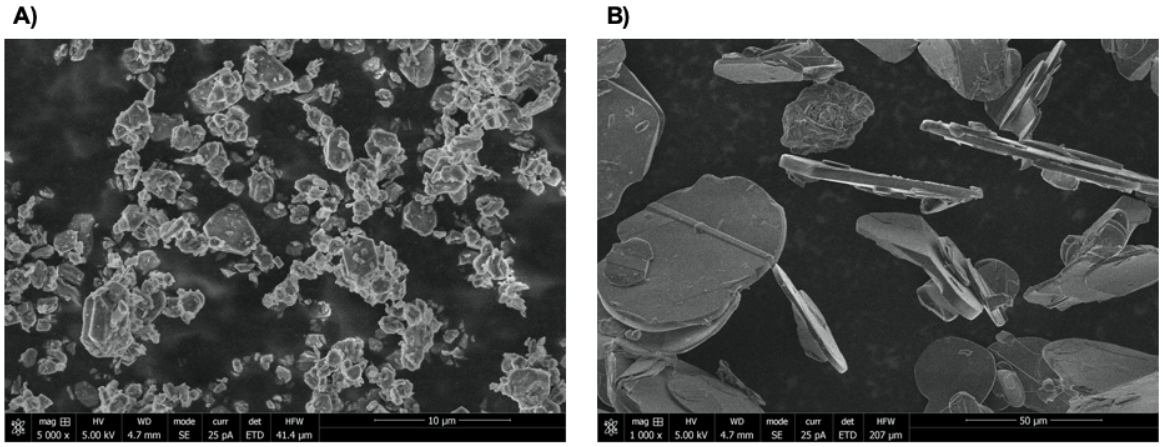

Figure S1. SEM images of **A)** alumina trihydrate and **B)** boron nitride fillers.

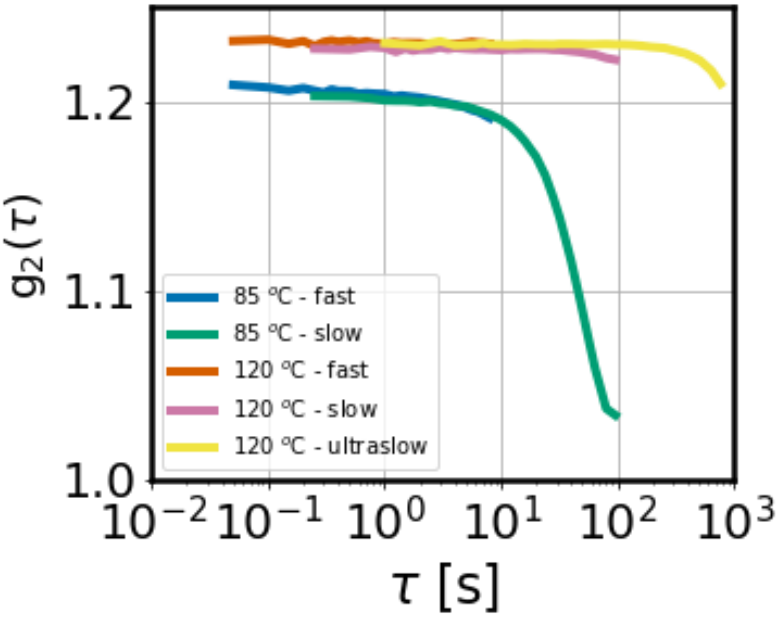

Figure S2. Comparison of one-time correlation functions g_2 from XPCS datasets with variable acquisition parameters at q = 0.0969 nm^{-1}. Total dose exposure (TDE) of each XPCS dataset (fast, slow, ultraslow) set below TDE threshold of < 1 s. Overlapping g_2 confirm dynamics are TDE-independent and radiation induced sample damage is mitigated. Each individual measurement is collected at a unique sample location to reduce accumulated radiation. In the out-of-equilibrium experiments, the dynamics are continuous between datasets (transition to a new spot on the sample), suggesting that the evolution of time-scales is not caused by accumulating X-ray dose.

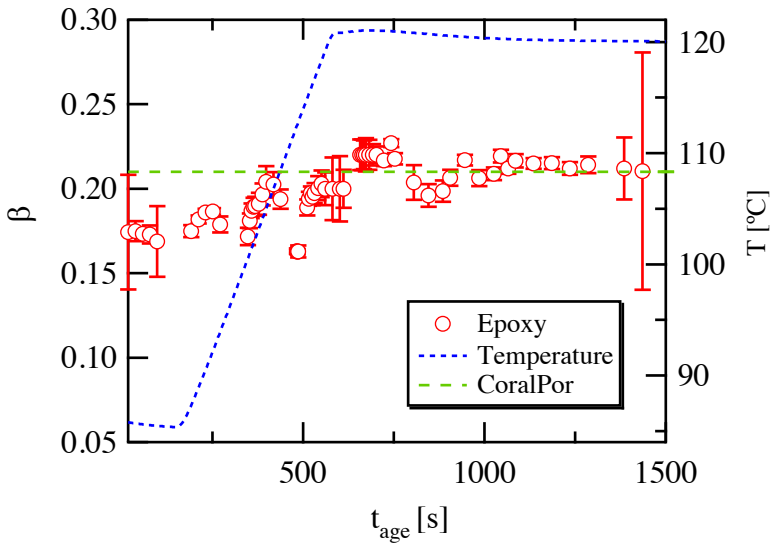

Figure S3. Siegert factor β as a function of t_{age} at representative q = 0.0969 nm^{-1}. Sample temperature is overlaid on secondary axis.

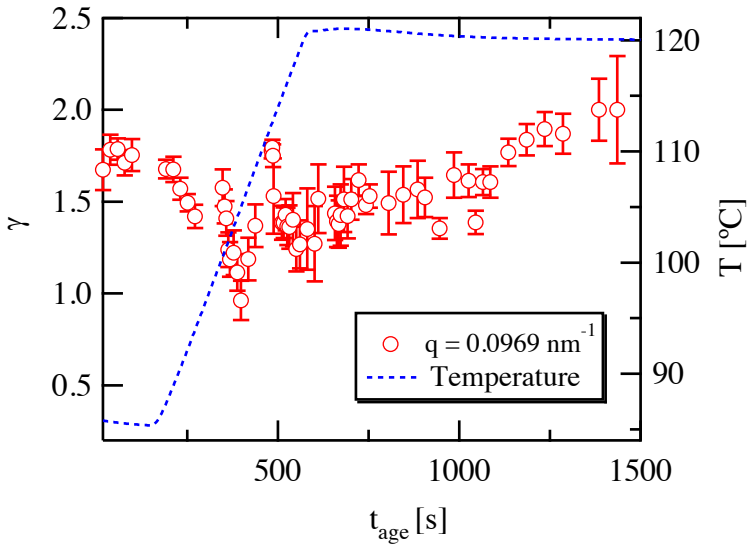

Figure S4. Compression exponent γ as a function of t_{age} at representative q = 0.0969 nm^{-1}. Sample temperature is overlaid on secondary axis.

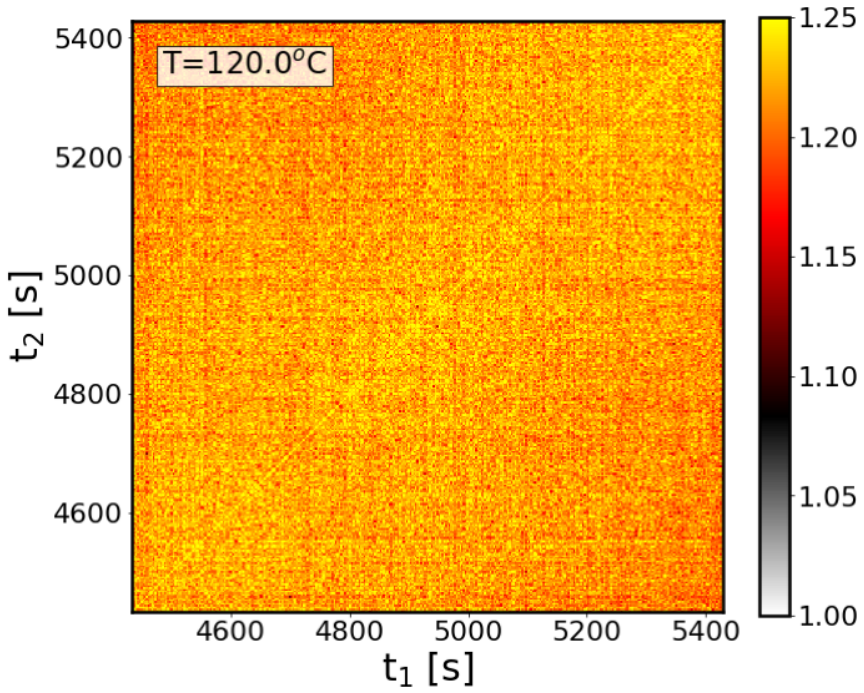

Figure S5. Two-time correlation after significant thermal curing (t_{age} ~ 5000 s). No relaxation of $g_2(q,\tau)$ detected suggesting sample has adequately cured and vitrification has occurred. Representative plots shown at q = 0.0969 nm^{-1}

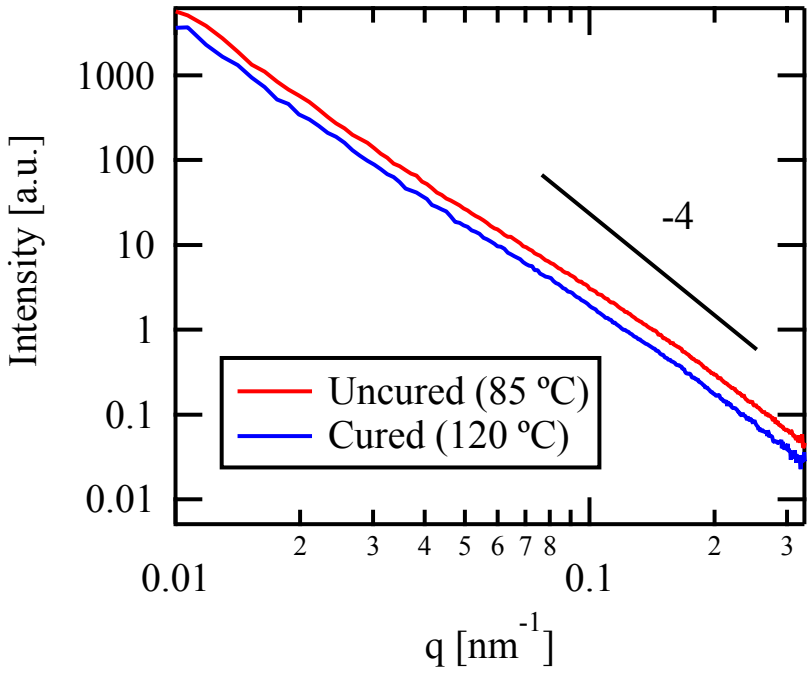

Figure S6. Time resolved SAXS *I(q)* at uncured state and post cured state. Power law scaling $I(q) \propto q^{-4}$ labeled.