Supplementary Materials

Comparing sintering and atomic layer deposition as methods to mechanically reinforce nanocolloidal crystals

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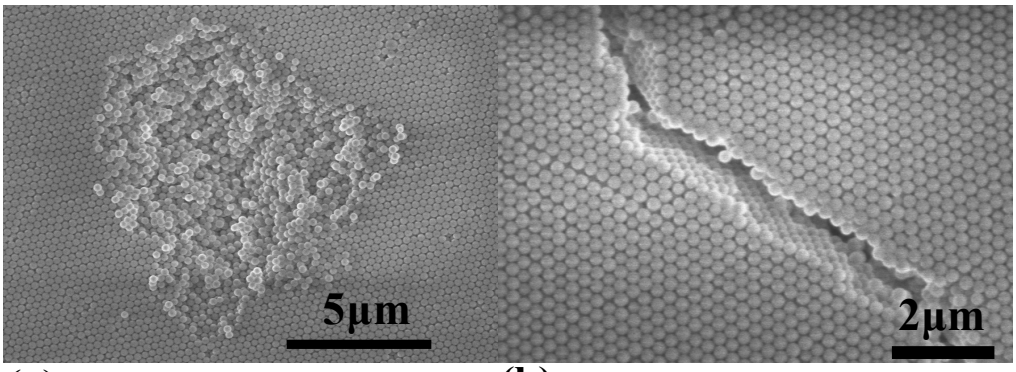


FIG. S1. SEM images of (a) a 2 μm indent on an as-assembled 254 nm NCC, and (b) an intrinsic cracking domain boundary in the as-assembled 254 nm NCC.

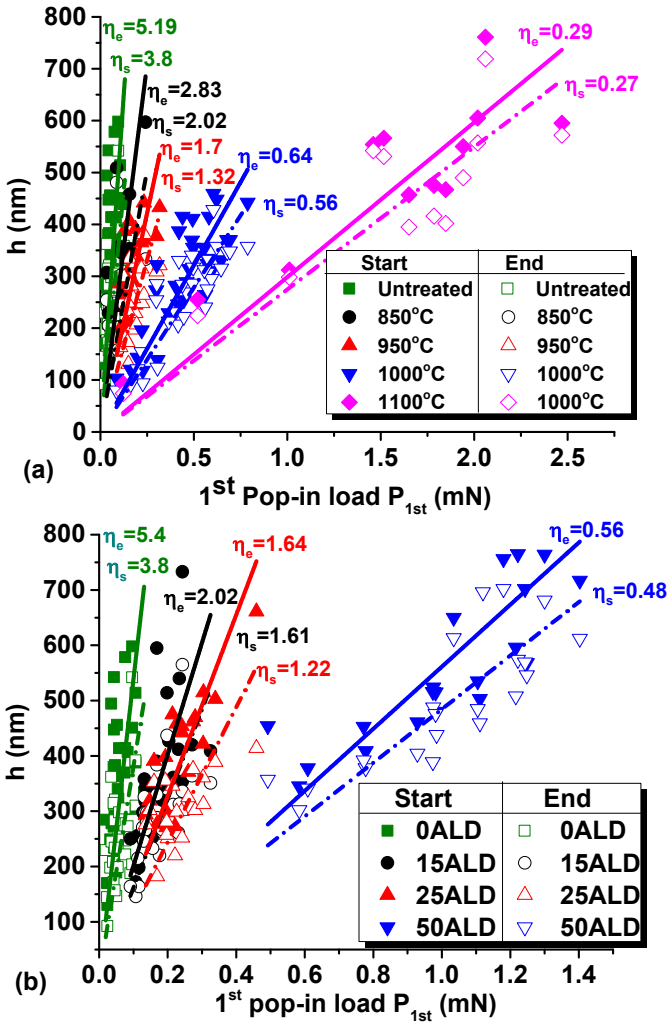
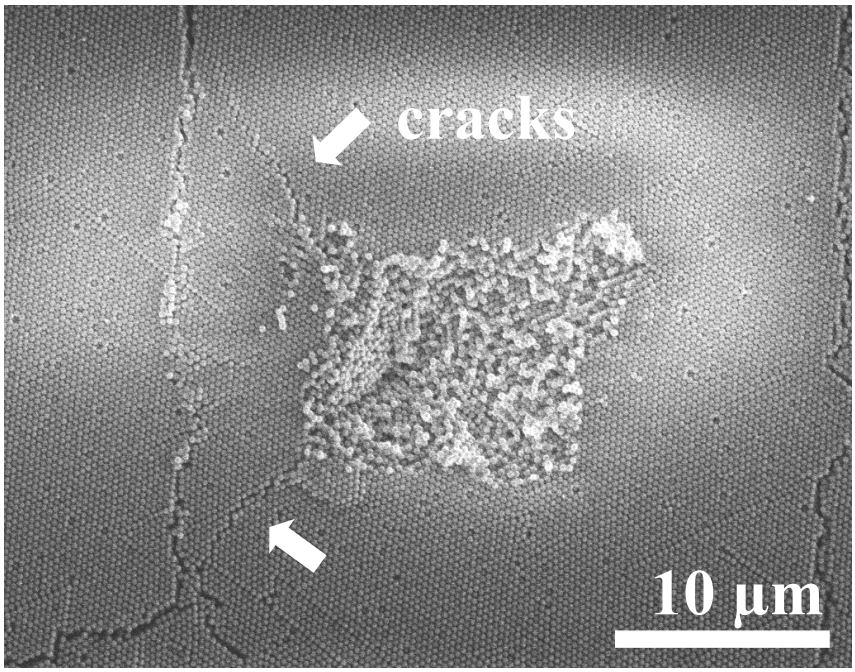
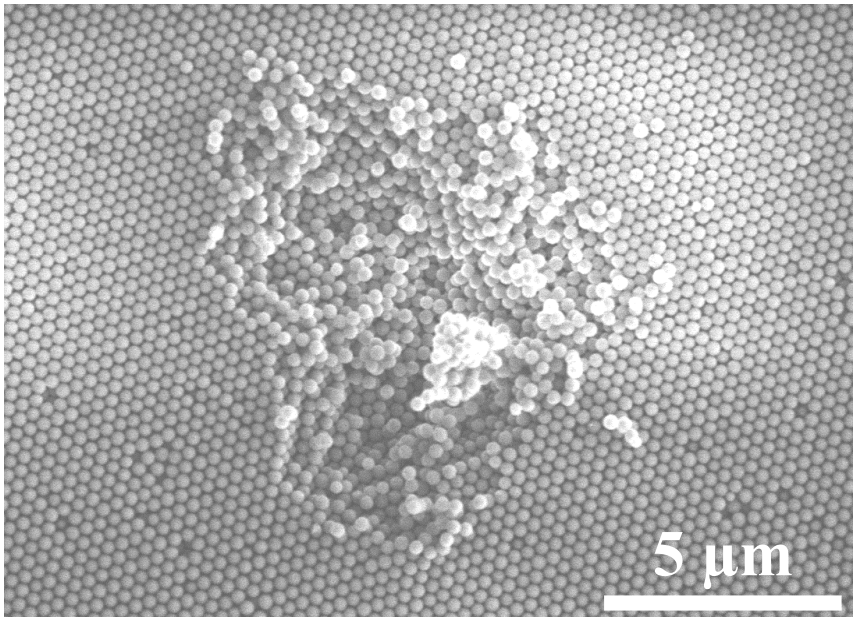


FIG. S2. The pop-in-start displacement h_s and pop-in-end displacement h_e of 1st pop-in vs. the 1st pop in load P_{1st} for (a) sintered and (b) ALD-treated 254 nm NCCs. Here, the slopes η_s (=dh_s/dP_{1st}) and η_e (=dh_e/dP_{1st}) are also fitted and labeled for each sample.



(a)



(b)

FIG. S3. SEM images of 2 µm indents on a 289 nm NCC with (a) uncontained long indentation-induced cracks and (b) without cracks. .

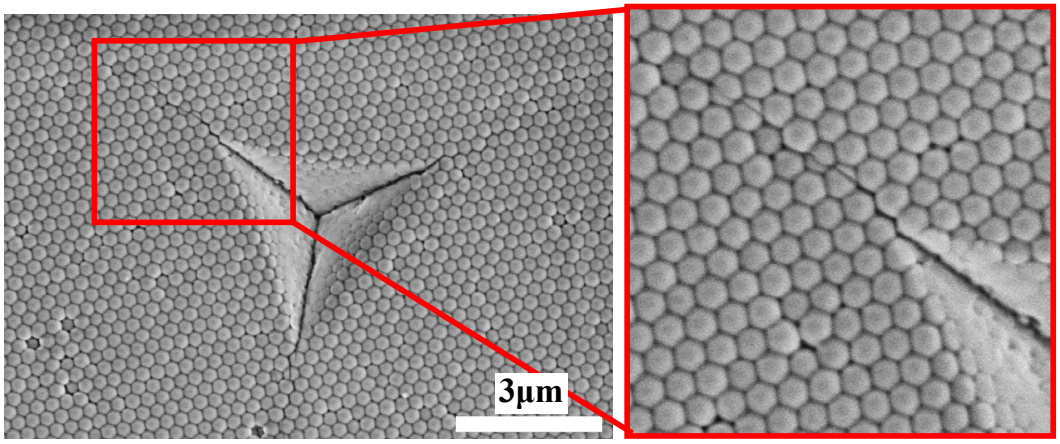


FIG. S4. (a) SEM image of a 2 µm indent on a 144ALD 289 nm NCC. (b) Magnified SEM image of the region boxed in (a) to show a well-defined and well-contained (WDWC) indentation crack.