Description of Additional Supplementary Files

File name: Supplementary Movie 1
Description: Movie of a long-time MD trajectory showing the early stages of homogeneous ice nucleation and slow growth phase followed by a more rapid growth leading to the formation of nanocrystalline ice at 210 K.

File name: Supplementary Movie 2
Description: Movie of a MD trajectory showing a zoom-in view of the later stages of grain growth mechanism and consolidation *via* grain boundary migration.

File name: Supplementary Movie 3
Description: Movie of a MD simulation showing the dynamical transformation of hexagonal layers in stacking disordered ice during the grain growth process.

File name: Supplementary Movie 4
Description: Movie of a MD simulation showing an in-plane transformation at 260 K between cubic and hexagonal layers in stacking disordered ice.