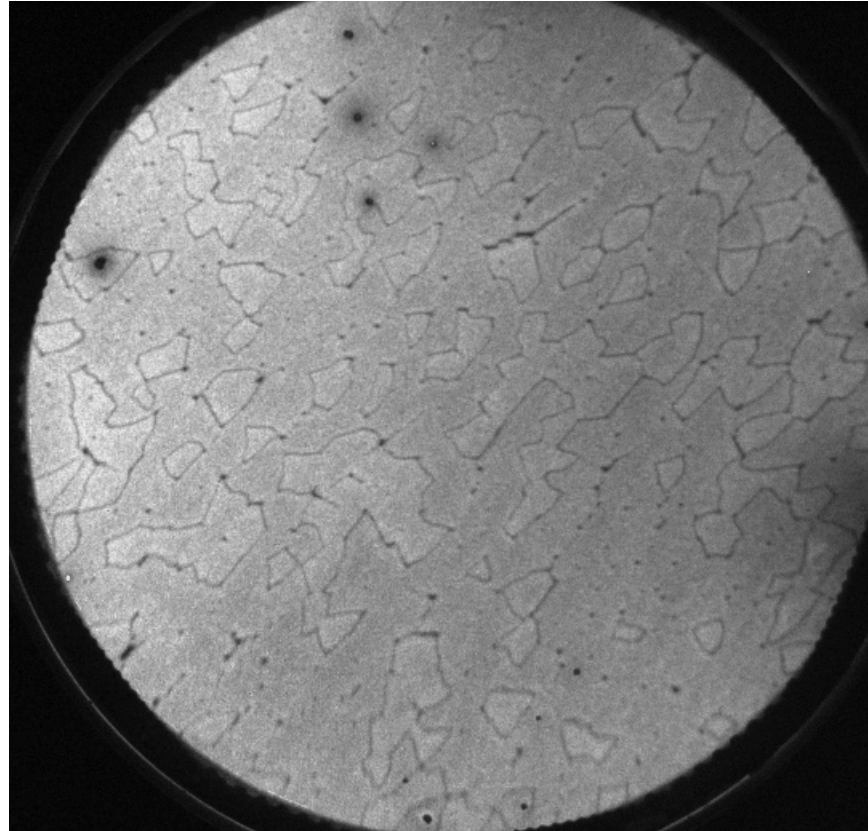


Video S1 LEEM video of h-BN islands oxidized in O₂. Oxidation conditions: temperature = 400 °C, P(O₂) = 1 × 10⁻⁶ Torr. Image conditions: STV = 2.0 V, FOV = 50 μm. The whole oxidation process lasted for 21min.



Video S2 PEEM video of full layer h-BN intercalated in NO₂.
Intercalation conditions: temperature = 140 °C, P(NO₂) = 5×10^{-7} Torr. Image conditions: FOV = 50 μm. The whole oxidation process lasted for 2 min 30 s.