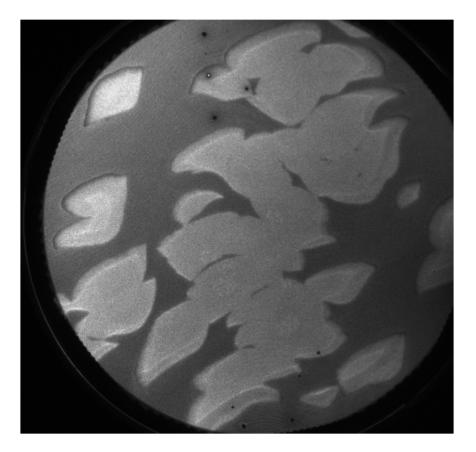
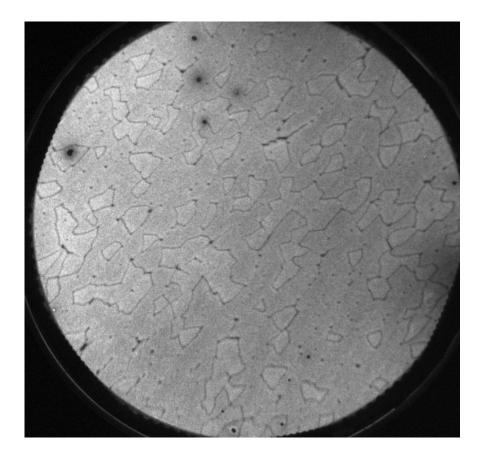
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Video S1 LEEM video of h-BN islands oxidized in O₂. Oxidation conditions: temperature = 400 °C, $P(O_2) = 1 \times 10^{-6}$ Torr. Image conditions: STV = 2.0 V, FOV = 50 µm. The whole oxidation process lasted for 21min.



Video S2 PEEM video of full layer h-BN intercalated in NO₂. Intercalation conditions: temperature = 140 °C, $P(NO_2) = 5 \times 10^{-7}$ Torr. Image conditions: FOV = 50 µm. The whole oxidation process lasted for 2 min 30 s.