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[202] Non-classical, two-step nucleation of h-BN on Pt(110)

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The observation of h-BN single-domain growth on Pt(110) calls for an investigation of the mechanism eliminating rotational domains. We investigated the transformation of a chemisorbed layer of Borazine into h-BN islands upon heating via UV photoemission and STM. Evidence is presented for a non-classical, two-step nucleation process with a metastable 1D precursor phase. Non-classical nucleation is mainly observed in crystallization of biomolecules and still under dispute as far as inorganic materials are concerned. The present example is the first one reported for 2D crystallization processes. However, the protocol used here yields various domains indicating a fundamental difference to the growth mode obtained by dosing Borazine at high temperatures.

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