Supporting Information

Phase Identification and Ordered Vacancy Imaging in Epitaxial Metallic Ta_2N Thin Films

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Table S1. Rutherford Backscattering Spectrometry of TaNx grown on SiC

	Atomic Concentrations [at%]				
	Si	Nb	N	C	Ta
TaNx Film	-	1	38.4	-	60.6
SiC Substrate	50	-	-	50	-

The estimated uncertainties from RBS are as follows, Ta ±1 at%, Nb ±0.5 at%, Si ±1 at%, N ±4%, C ±5 at%.

Table S2. EDS of TaN_x grown on SiC

	Atomic Concentrations [at%]				
	Si	Nb	N	C	Ta
TaN_x Film	-	-	37.1±2.1%	-	62.9±2.44%

STEM-EDS was acquired off zone axis to avoid channeling, the acquisition was done across a large area of the entire film. The composition was determined by summing the signal over the entire film area. The sample was tilted towards the EDS detector in order to optimize the collection of x-rays and lower system peaks.

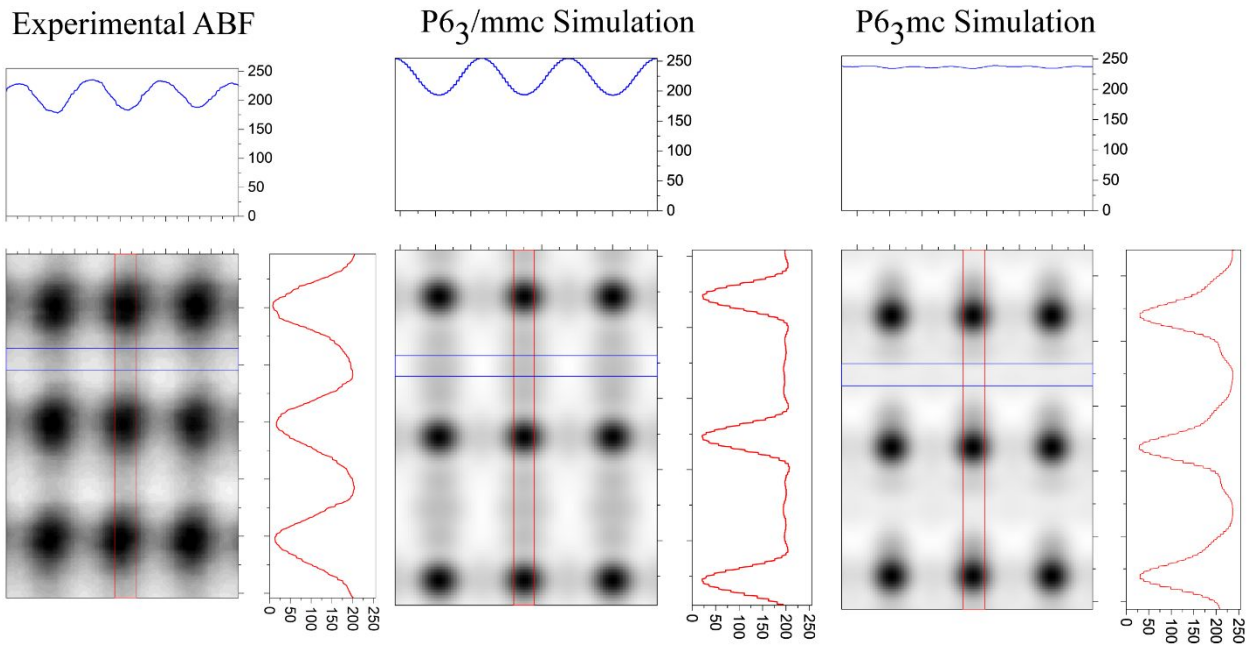

Figure S1. Extracted line profiles from the experimental and simulated ABF images shown in Figure 3. Specifically the blue line profile, which is centered about the N-sublattice position in the $P6_3/mmc$ structure, confirms the presence of the N-sublattice in the experimental ABF image. The line plots created for the experimental ABF image are displayed as normalized to 8-bit for comparison to simulation but no data processing was done to compress the raw data.