

Supplemental Information

Quasi-1D Moiré Superlattice in Self-twisted Two-allotropic Antimonene Heterostructures

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S1. Movie collected during deposition of Sb layers on W(110) substrate at temperature of 130 °C. The first four frames were collected with higher energy, resulting in the change in contrast at the beginning of the film.

Attached as file **movie_S1.avi**

S2. The overcontrasted μ LEED patterns recorded for the β -Sb/ α -Sb heterostructure showing additional diffraction spots.

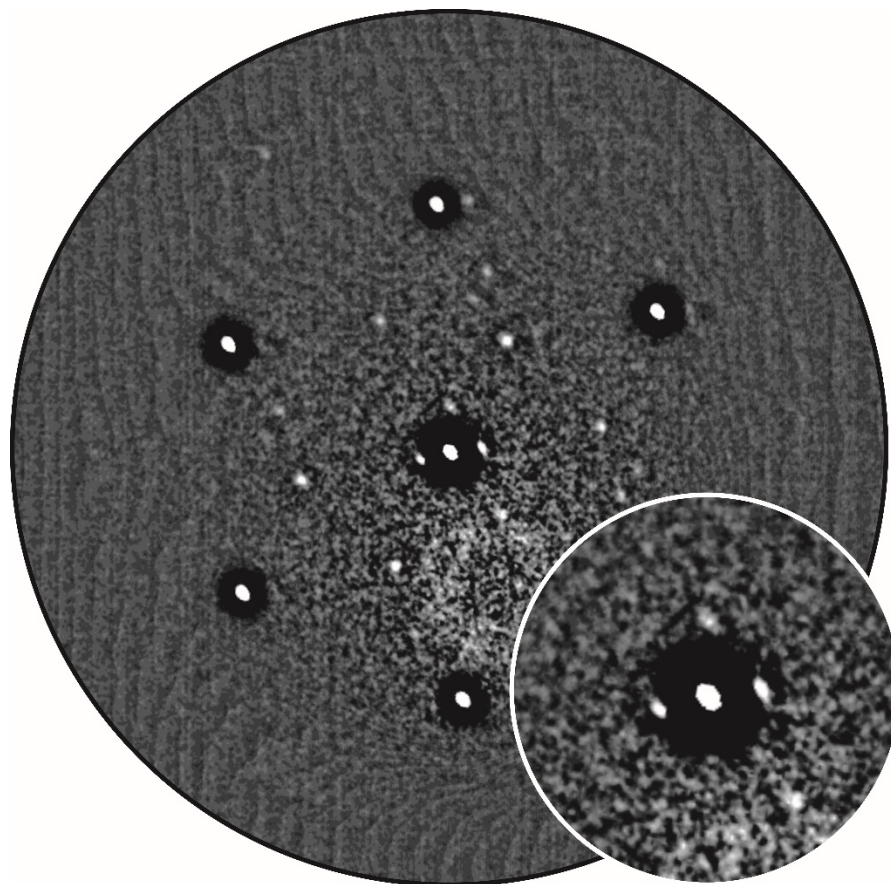


Figure S2. The μ LEED pattern recorded for the β -Sb/ α -Sb heterostructure collected with electron energy of 26 eV.

S3. Figure S3 a, b and c illustrate both modeled α -Sb structural domains and β -Sb layer, generated by multiplication of their respective unit cells using experimentally obtained lattice parameters, which are $4.39 \text{ \AA} \times 4.75 \text{ \AA}$ for rectangular lattice of α -Sb and 4.26 \AA for the honeycomb structure of the β -Sb phase. The relative rotations between both α -Sb domains and β -Sb layer were determined from μ LEED patterns depicted in the Figure 3a and 3b in the main manuscript to ensure the consistence between modeled layers and the experimental data. Below the modeled atomic lattices, images obtained by Fast Fourier Transform (FFT) analysis show the reciprocal lattices of each structures.

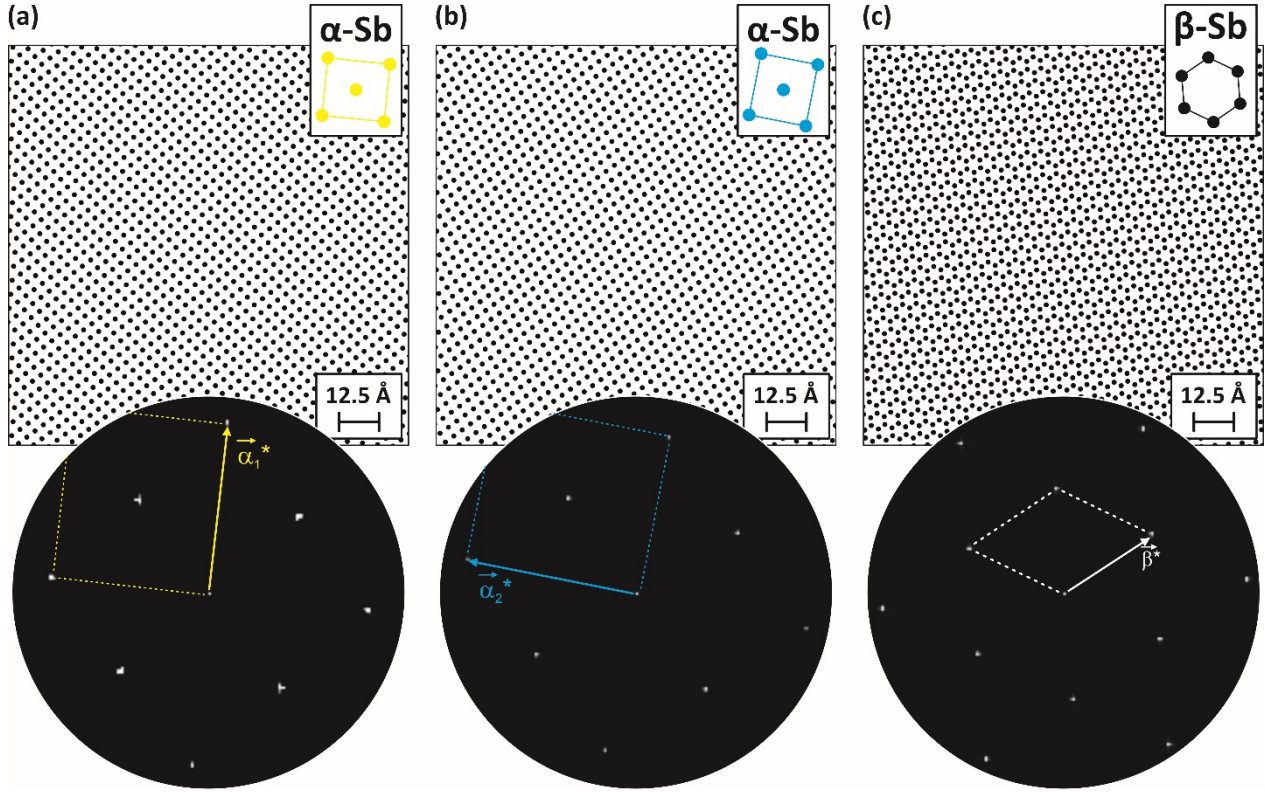


Figure S3. (a) Ball model depicting the atomic lattice of first α -Sb domain (highlighted in yellow), (b) ball model illustrating the atomic lattice of the second α -Sb domain (highlighted in blue) and (c) representation of the β -Sb layer. Below the corresponding Fast Fourier Transform (FFT) images. The unit cell of the reciprocal lattices for each structures are marked with dashed parallelograms and defined by vectors $\vec{\alpha}_1^*$, $\vec{\alpha}_2^*$ and $\vec{\beta}^*$.

S4. Movie presenting a broader look at the realm of the Moiré patterns within the investigated system. This movie illustrates the Moiré pattern in the real and reciprocal space as a function of the ϕ angle, which is defined similarly to the ϕ_1 vector presented in Figure 3b, but in the movie the ϕ angle smoothly varies from 0° to 180° .

Attached as file **movie_S4.avi**