

Supplementary Material to the article

“New polytype of NbS₃ whiskers: from simple to complex”

Here we report the study of the NbS₃ whisker of the triclinic polytype NbS₃-I. The lattice parameters of the high-resolution TEM (HR TEM) images in three mutually orthogonal projections are presented in Fig. S1a, Fig. S1c and Fig. S1e. Inspection of these HR TEM images and corresponding selected area electron diffraction (SAED) patterns (Fig. S1a inset, Fig. S1d and Fig. S1f) unambiguously demonstrate that the crystal structure of the sample corresponds to phase I. A high density of stacking faults and microtwins with the twinning planes parallel to (001) is clearly visible in HR TEM image (Fig. S1a) and enlarged HR HAADF STEM image (Fig. S1b). Note that in HR HAADF STEM the pairs of triangular prisms are not resolved and appear as bright spots. The SAED patterns of NbS₃-I whiskers in three mutually perpendicular projections (Fig. S1) do not reveal any traces of superstructural reflections responsible for CDW, which is consistent with previous studies.

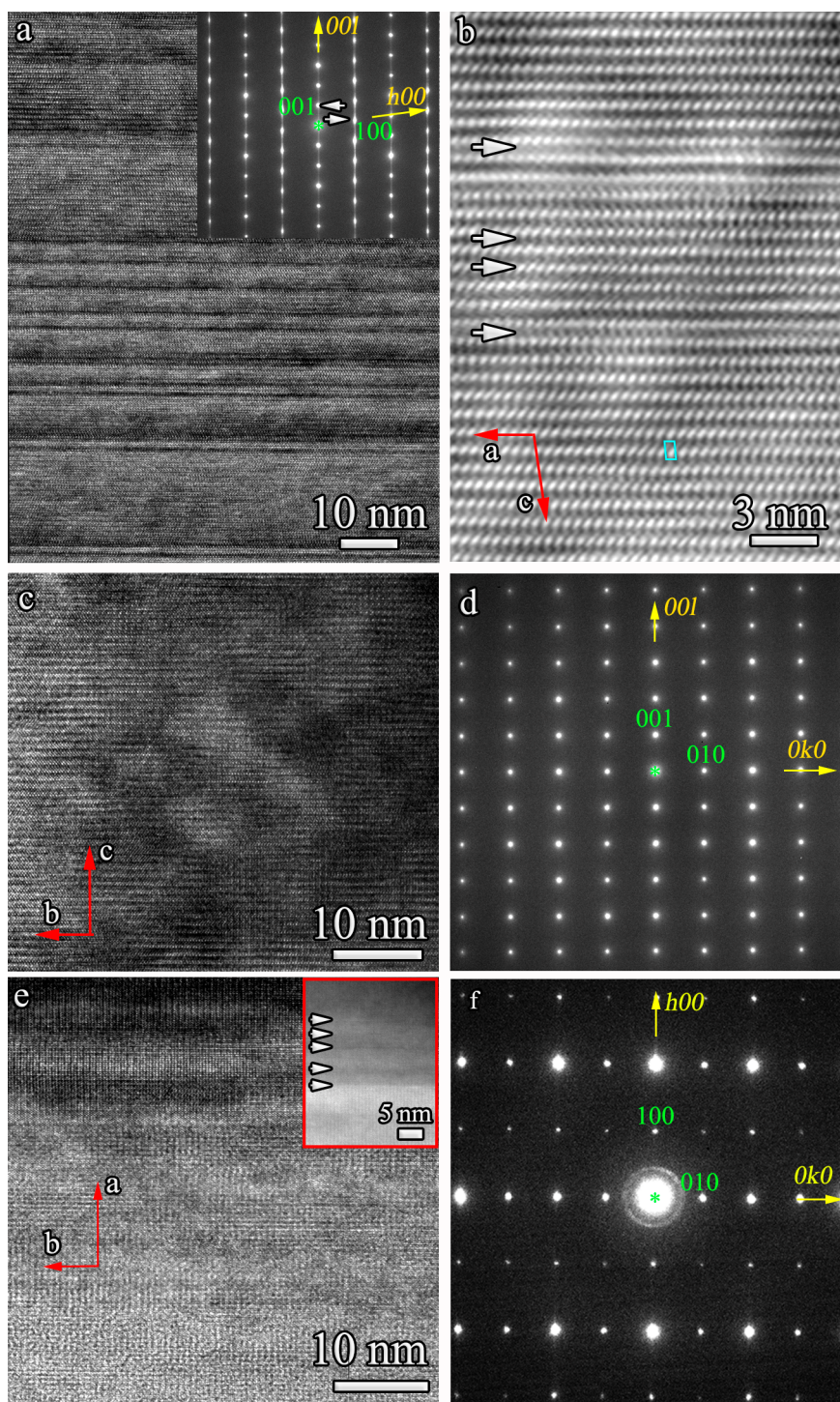


Fig. S1. Images and electron diffraction patterns of NbS₃-I whisker (a) HR TEM in the [010] projection, the inset is SAED pattern; (b) enlarged HR HAADF TEM image in the same projection, the twinning planes are arrowed, the unit cell is highlighted by a blue diamond; (c) HR TEM and (d) the corresponding electron diffraction pattern in the [100] projection; (e) HR TEM (inset - HAADF STEM image of twins marked by the arrows) and (f) - the corresponding SAED pattern, obtained in the [001] projection.