Supporting information to

Texture evolution in rhombohedral boron carbide films grown on 4H-SiC($000\bar{1}$) and 4H-SiC(0001) substrates by chemical vapor deposition

Laurent Souqui[a], Sachin Sharma, Hans Högberg, Henrik Pedersen

Department of Physics, Chemistry and Biology, Linköping University, SE-581 83 Linköping, Sweden

[a]Present address: Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, 1304 W. Green St. MC 246, Urbana, Illinois 61801, USA

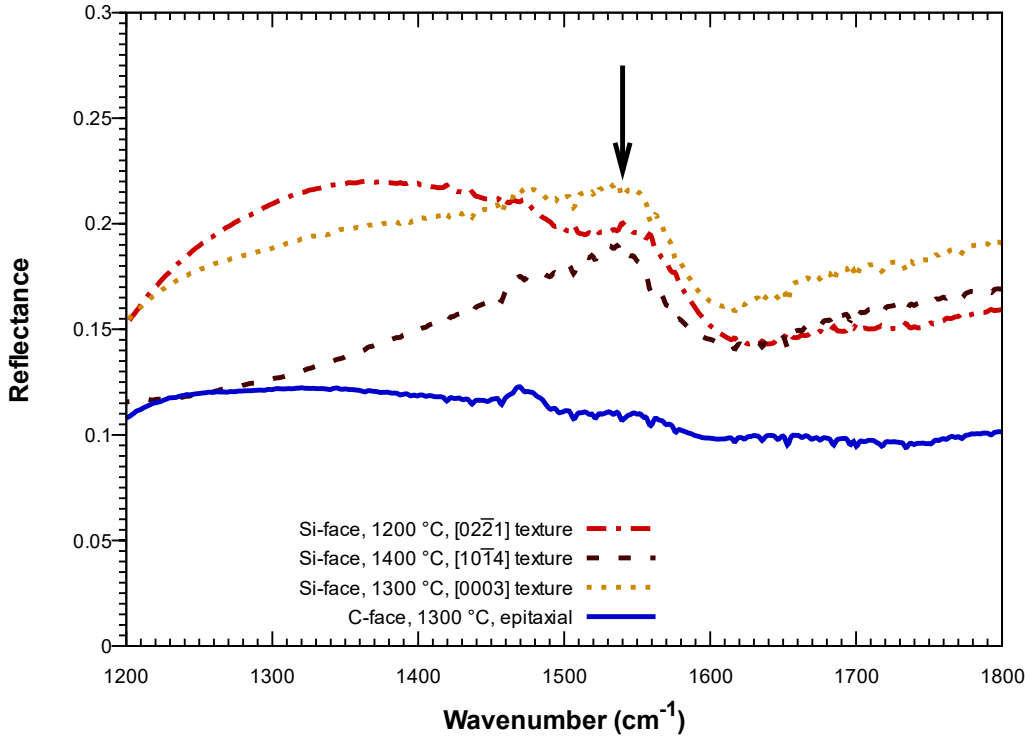

Fig. S1: FTIR reflectance spectra of polycrystalline r-B_xC films orientated along [02$\bar{2}$1] (dotted yellow curve), [1014] (dotted-dashed red curve) and [0003] (dashed brown curve) and epitaxial boron carbide (solid blue curve) around the chain stretching mode around 1550 cm^{-1} as indicated by the black arrow. The small feature at around 1470 cm^{-1} originates from the substrate (more clearly visible in Fig. S2).

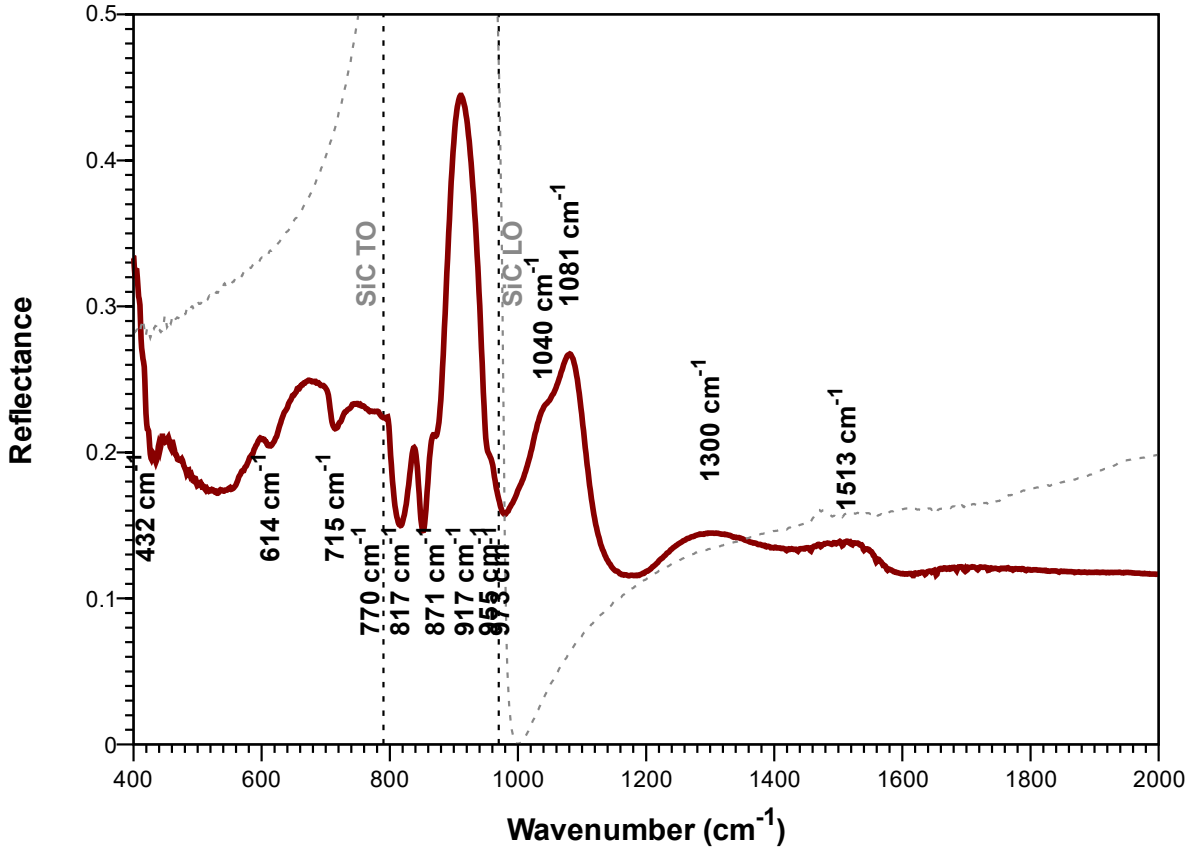

Fig. S2: FTIR reflectance spectra of a polycrystalline r-B_xC film deposited at 1400 °C on Si-face 4H-SiC(0001) (solid red curve) and of the bare 4H-SiC(0001) substrate (dashed grey curve).

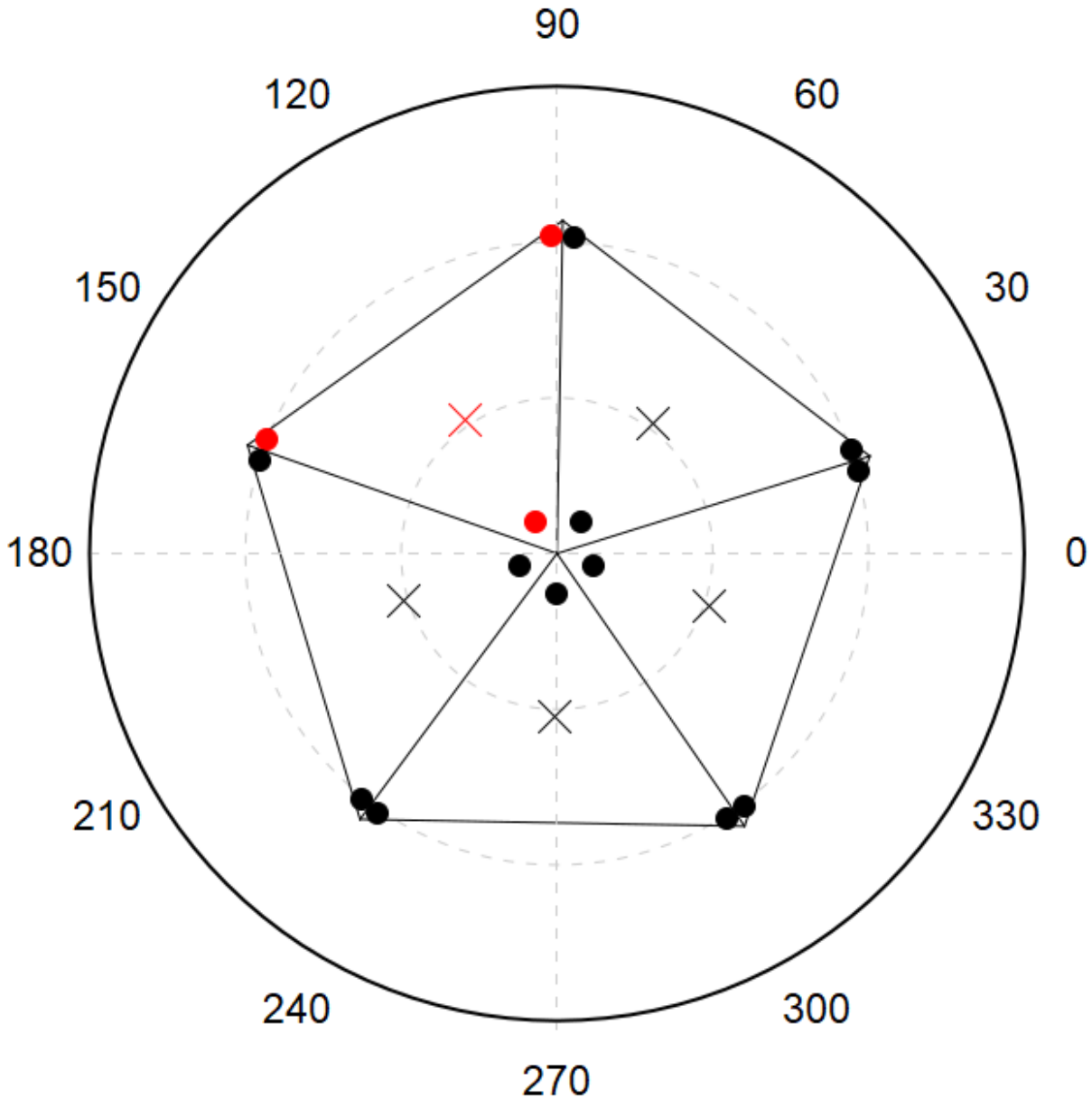

Fig. S3: Schematic of a pole figure representing the distribution of poles for one five-fold twinned crystal. The $(10\bar{1}4)$ poles (red circles) and (0003) pole (red cross) of an untwinned crystal, and corresponding poles obtained by twinning are shown in black. The pole positions were calculated using the CaRine software.

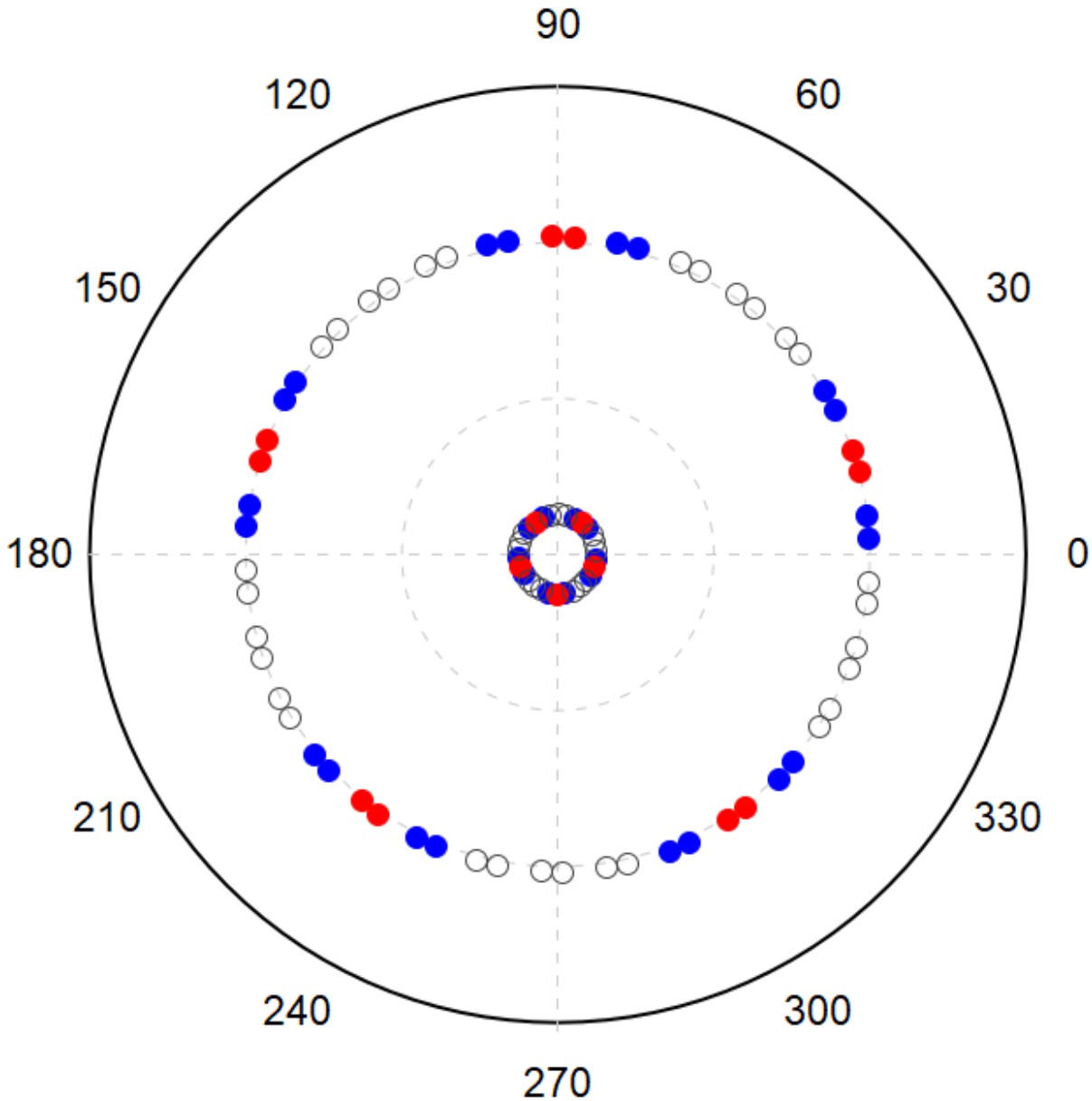

Fig. S4: Schematic of a pole figure representing the distribution of $(10\bar{1}4)$ poles for six five-fold twinned crystals, rotated 60° each from each other, as would be the case on a hexagonal substrate. Here the colours represent a distribution of these crystals so that one orientation (in red) and the ones rotated -60° and +60° with respect to that orientation (blue) are the most intense, while the others are weaker. This is comparable to pattern observed in figure 8.