Figure S1.

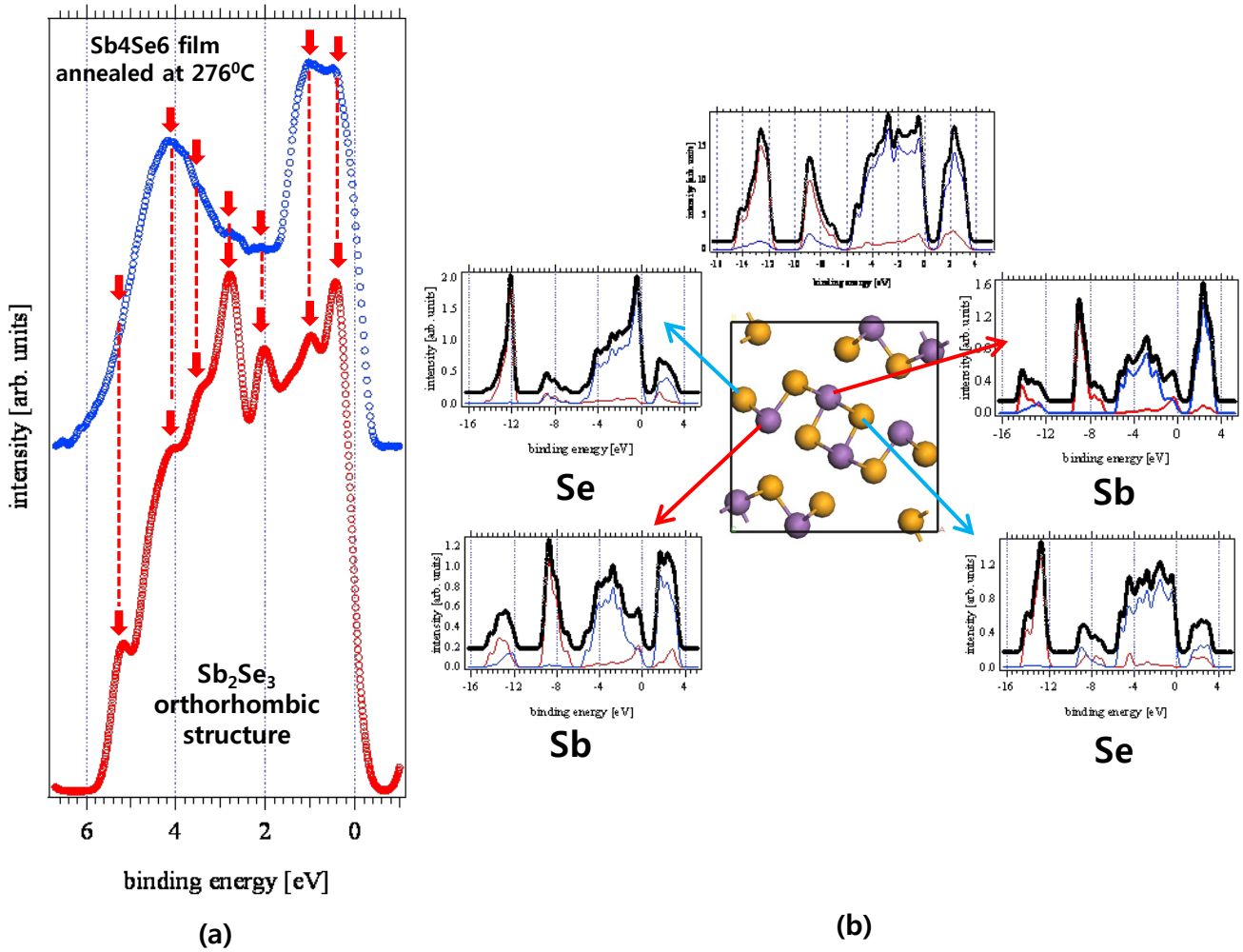

Figure S1. (a) Valence band spectrum of Sb4Se6 film annealed at 276°C and Sb_2Se_3 orthorhombic crystal structure calculated by DFT(density functional theory) . (b) PDOS(partial density of state) of each element in calculated Sb_2Se_3 orthorhombic crystal structure (red curve: S orbital, blue curve: P orbital and black: total intensity)

Figure S2.

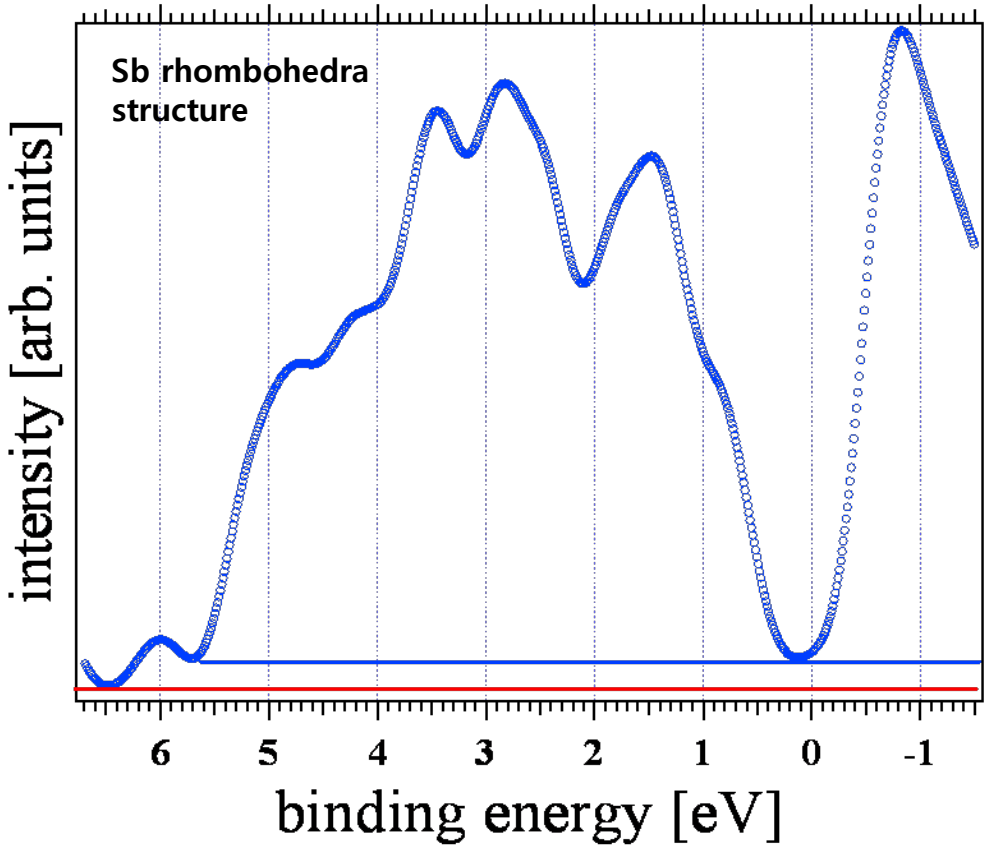

Figure S2. Valence band spectrum of Sb rhombohedra crystal structure calculated by DFT(density functional theory)

Figure S3.

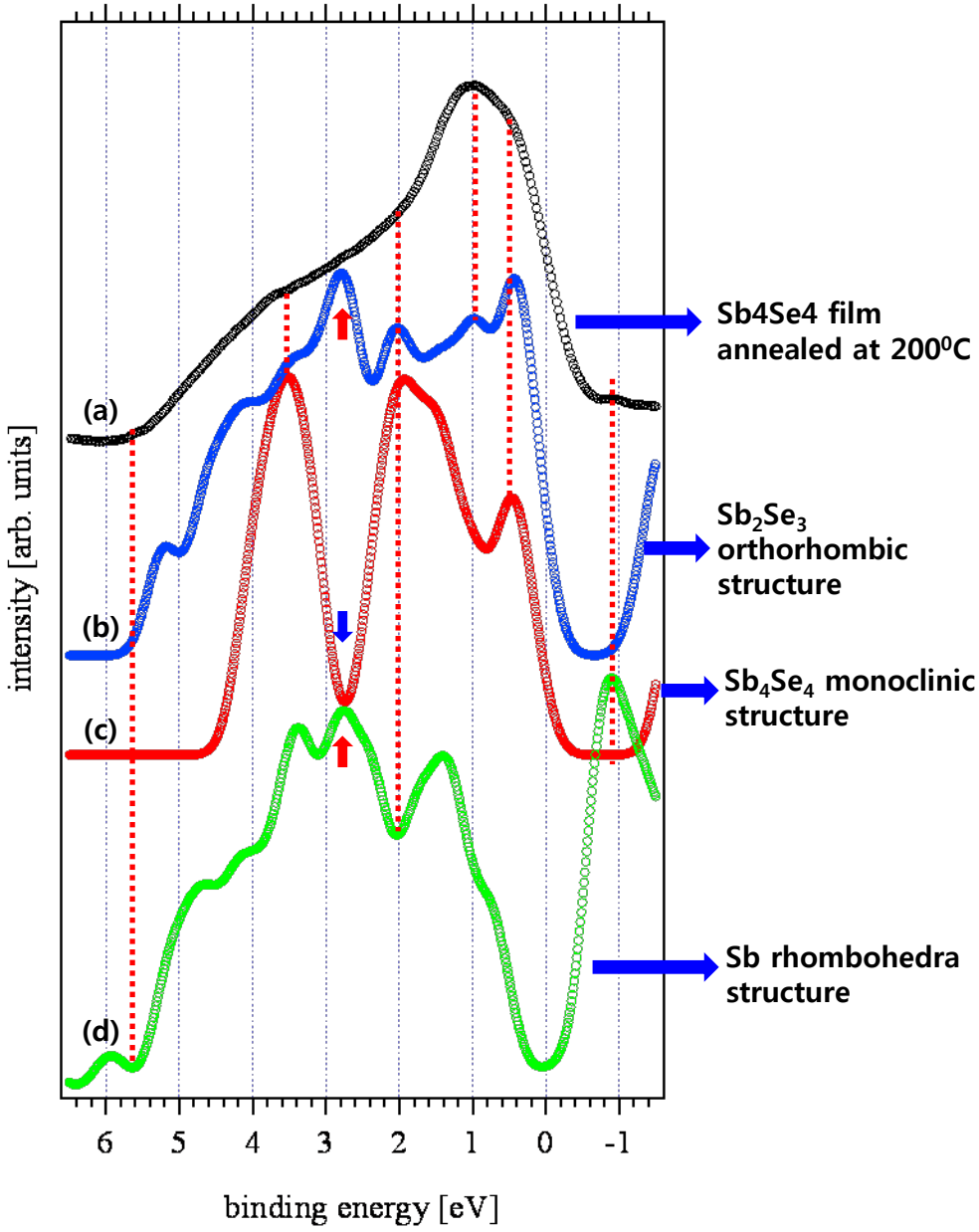

Figure S3. Valence band spectrum of (a) Sb4Se4 film with Sb_2Se_3 orthorhombic, Sb rhombohedra and Sb_4Se_4 monoclinic crystal structure and (b) Sb_2Se_3 orthorhombic, (c) Sb_4Se_4 monoclinic and (d) Sb rhombohedra crystal structure calculated by DFT(density functional theory).