

Supplementary Information

for

Chemical Vapour Deposition of Antimony Chalcogenides with Positional and Orientational Control: Precursor Design and Substrate Selectivity

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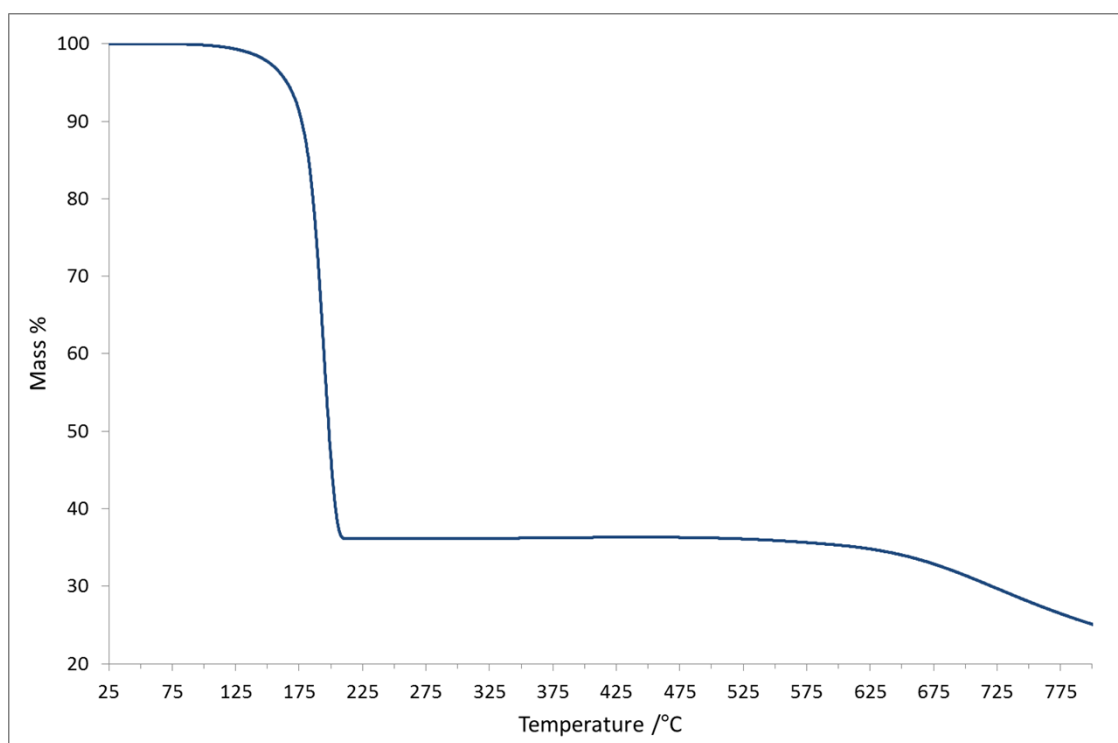
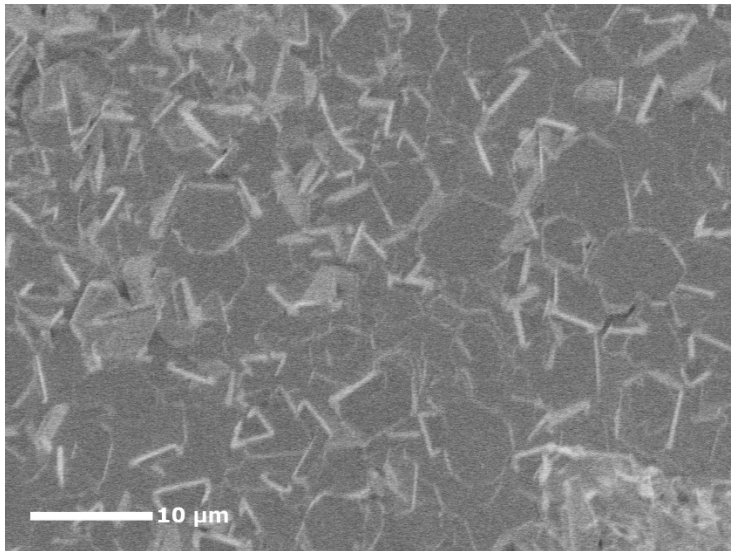
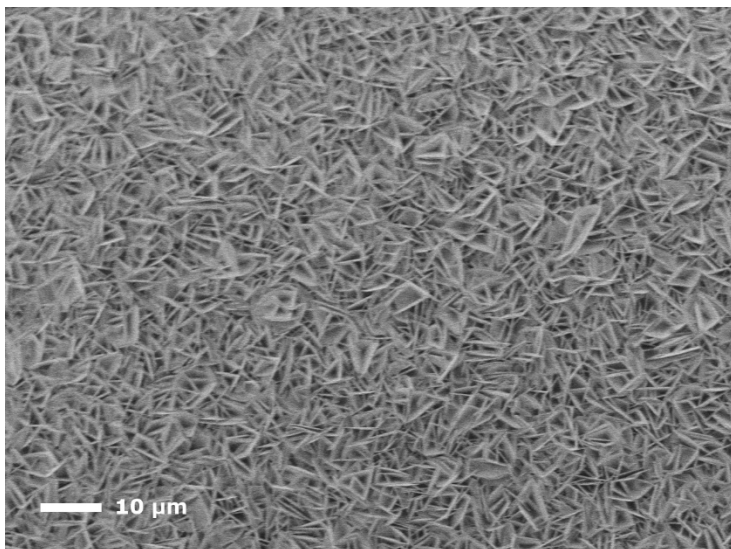


Figure S1 Thermogravimetric analysis of MeSb(TeⁿBu)₂.



(a)



(b)

Figure S2. Lower magnification SEM images of films deposited by CVD onto fused SiO₂ substrates showing uniform film deposition; tile (a) in hotter zone; tile (b) in cooler zone.

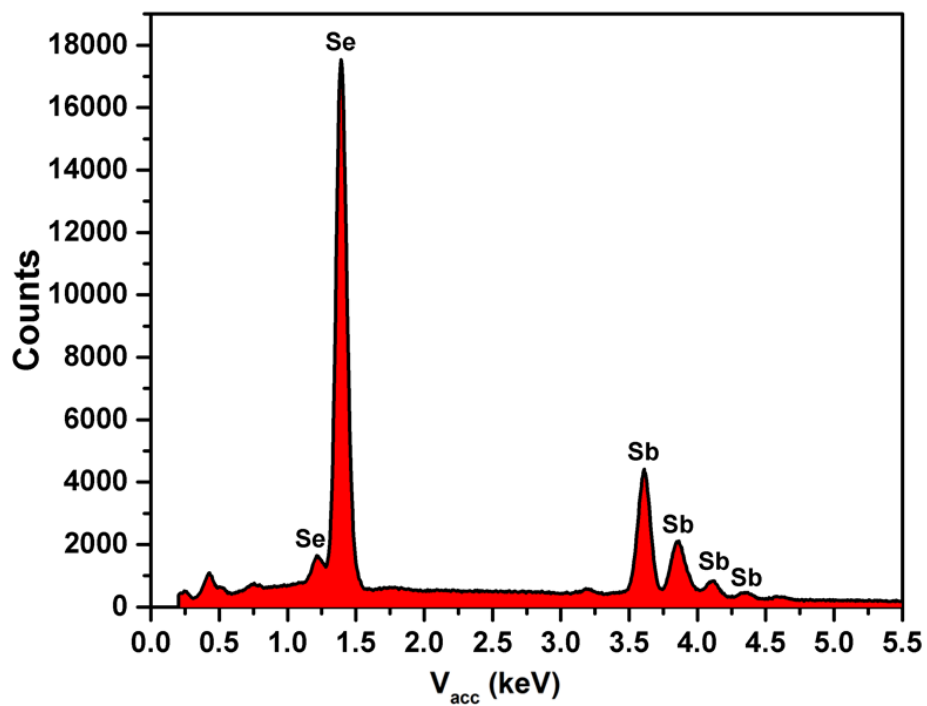
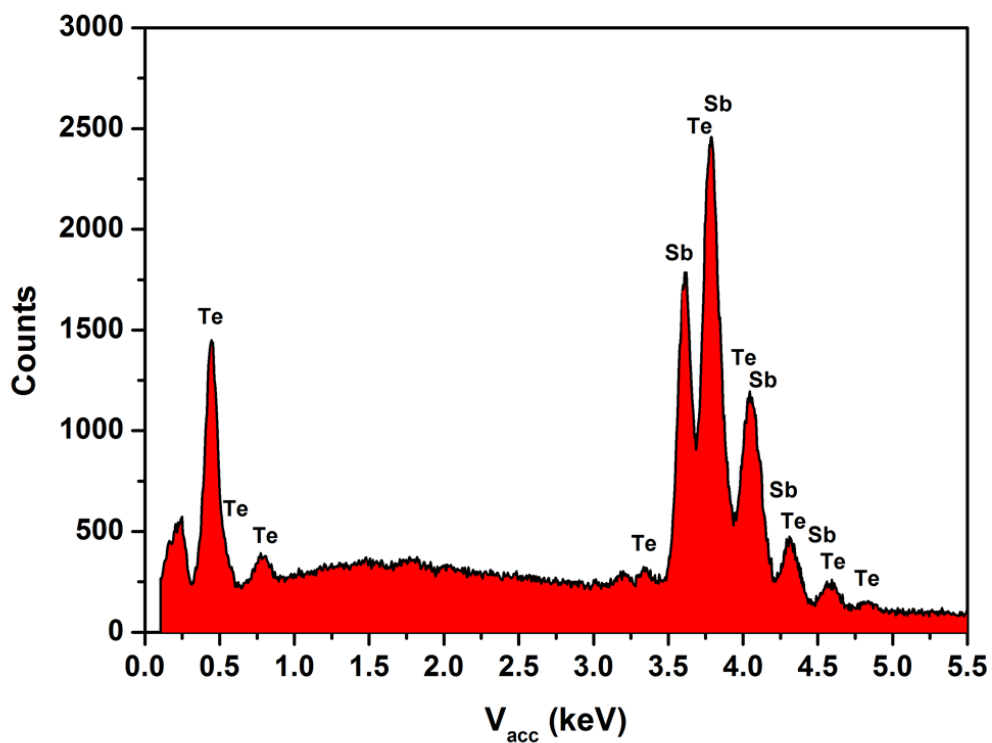


Figure S3 EDX spectrum of Sb_2Te_3 thin film (top) and Sb_2Se_3 thin film (bottom).

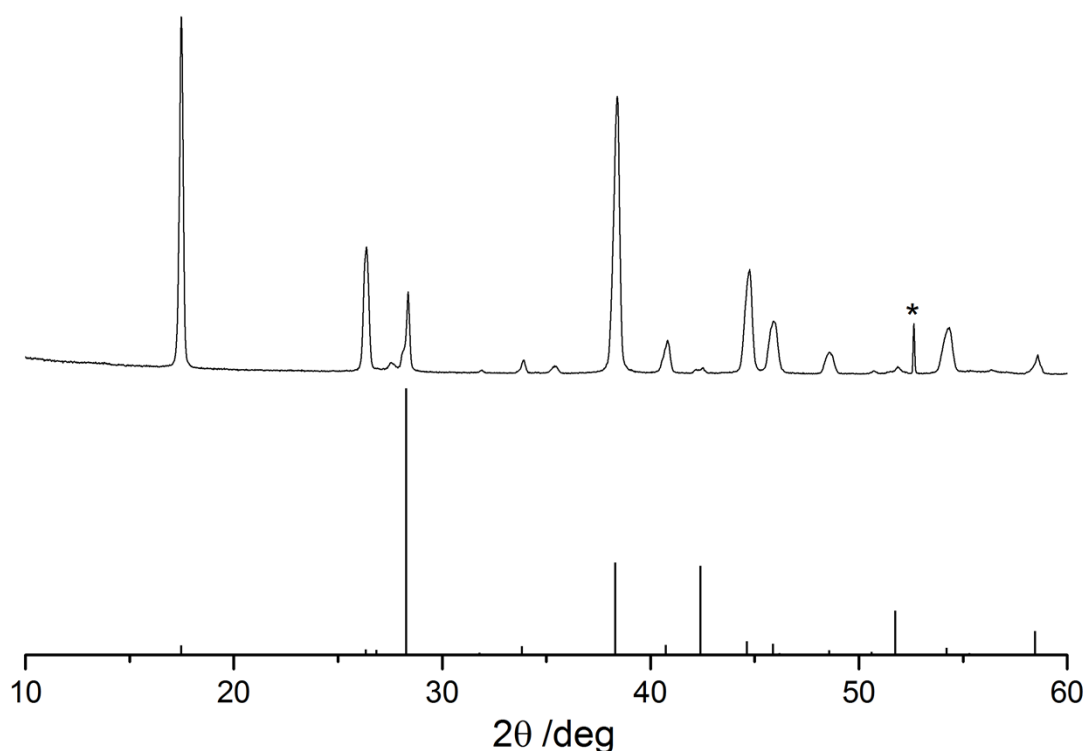


Figure S4 XRD pattern from a grazing incidence scan of a Sb_2Te_3 film deposited onto a PVD silica substrate (top), showing significant enhancement of the 0 0 1 peaks. Database pattern for Sb_2Te_3 (bottom).¹ Starred (*) peak corresponds to the 3 1 0 reflection of the substrate silicon wafer.²

Table S1 Lattice parameters calculated from decomposition analysis of XRD patterns of thin films of Sb_2E_3 , literature values.

Data	a /Å	b /Å	c /Å	R_{wp} %	R_p %
Bulk Sb_2Te_3 (lit.) ¹	4.264(1)	-	30.458(7)	-	-
Sb_2Te_3 film (a) on fused SiO_2	4.26966(5)	-	30.412(1)	15.9	10.1
Sb_2Te_3 film (b) on fused SiO_2	4.26640(8)	-	30.4635(9)	9.7	7.5
Sb_2Te_3 film on PVD SiO_2	4.2492(3)	-	30.374(2)	14.5	10.0
Bulk Sb_2Se_3 (lit.) ³	11.62(1)	11.77(1)	3.962(7)	-	-
Sb_2Se_3 film on fused SiO_2	11.610(7)	11.756(7)	3.969(2)	17.3	13.6

References

1. T. L. Anderson and H. B. Krause, *Acta Crystallogr. Sect. B*, 1974, **30**, 1307-1310.
2. C. Filippi, D. J. Singh and C. J. Umrigar, *Phys. Rev. B*, 1994, **50**, 14947-14951.
3. N. W. Tideswell, F. H. Kruse and J. D. McCullough, *Acta Crystallogr.*, 1957, **10**, 99-102.