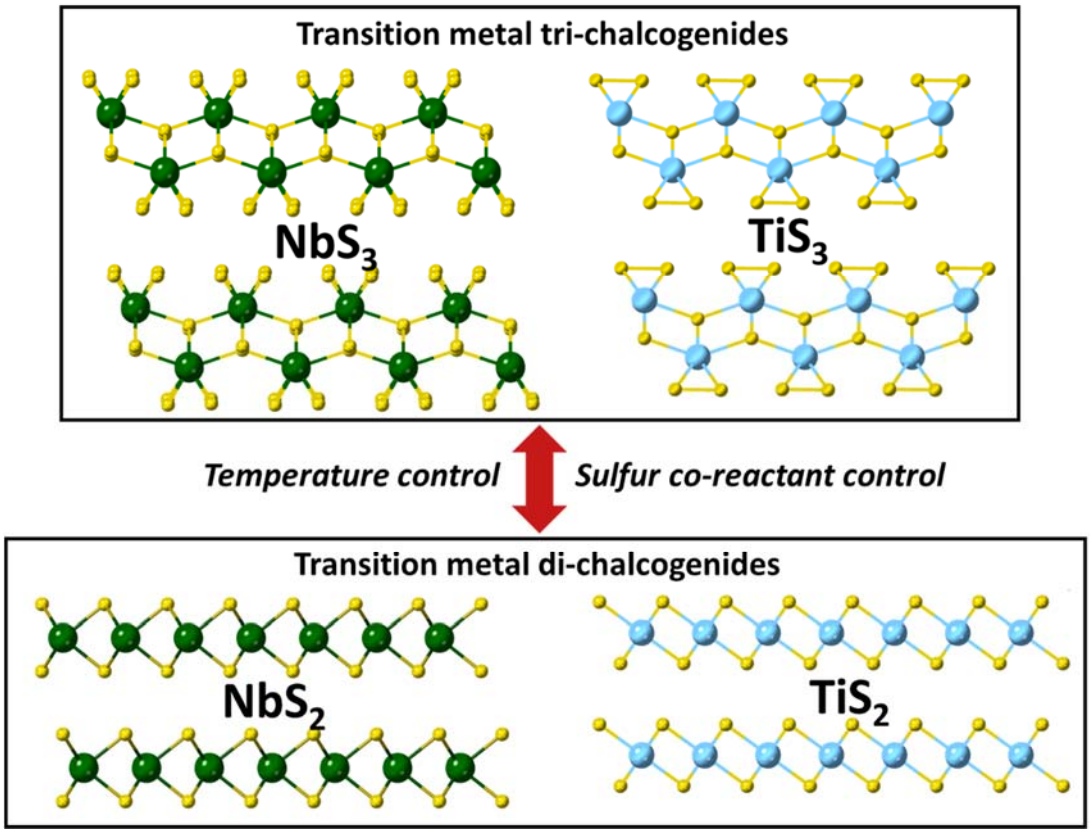

Figure 1: Schematic representation of the control between TMDCs and TMTCs that can be achieved by controlling both deposition temperature and co-reactant, respectively.

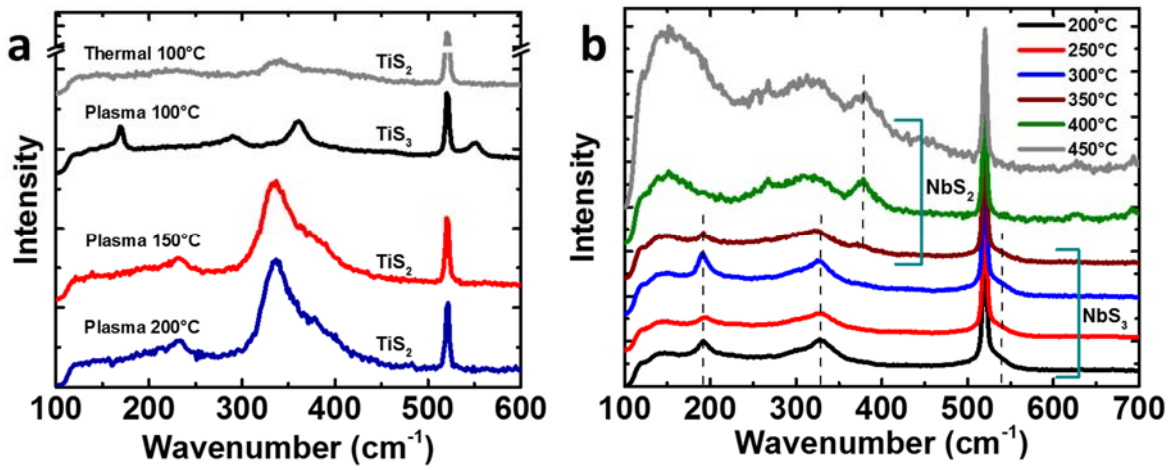

Figure 2: a) Raman spectra shows the vibration mode peaks of TiS_2 (1T phase) for films deposited at 150°C and 200°C in case of plasma-enhanced ALD (red and blue line) and at 100°C for thermal ALD (grey line). And vibration mode peaks of TiS_3 for film deposited at 100°C by plasma-enhanced ALD (black line). b) Raman spectra of NbS_x films deposited between 200°C and 450°C by plasma-enhanced ALD. The films between 200°C and 300°C shows the vibration mode peaks of NbS_3, and the films deposited at 400°C and 450°C show the vibration modes of NbS_2 (3R phase). While the 350°C film shows the presence of mixed phase with both NbS_3 and NbS_2.