Supporting Information

Microwave-Assisted Synthesis of Group 5 Transition Metal Dichalcogenide Thin Films

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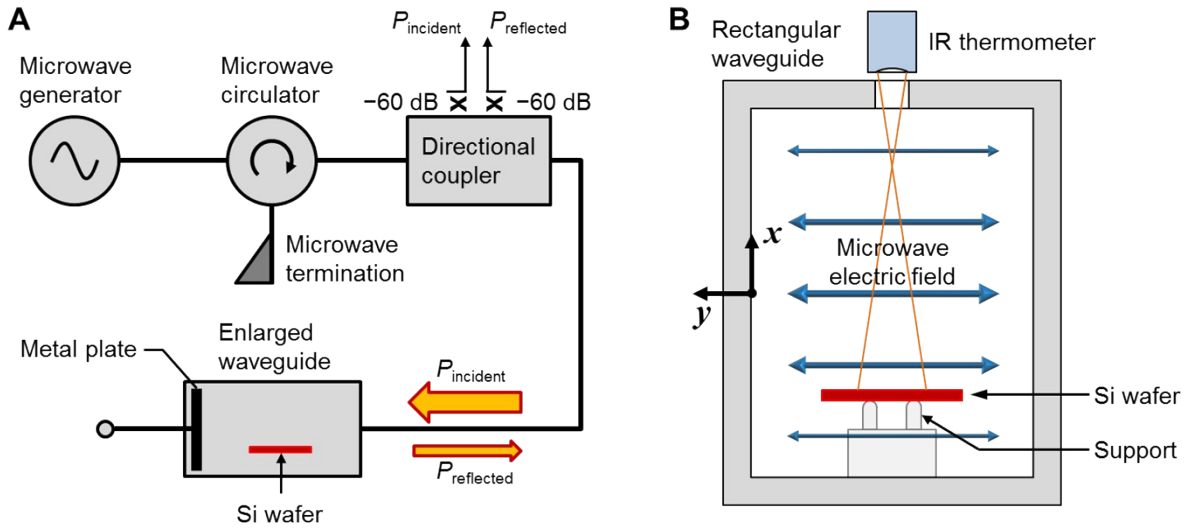

Figure S1. Schematic of microwave irradiation setup. (A) Microwaves were irradiated on the Si wafer in an enlarged waveguide. Incident and reflected microwave powers were monitored with a 60-dB directional coupler and two power sensors. (B) The wafer was supported by four small alumina pieces and was placed in parallel to the microwave electric field to increase the microwave-wafer interaction.

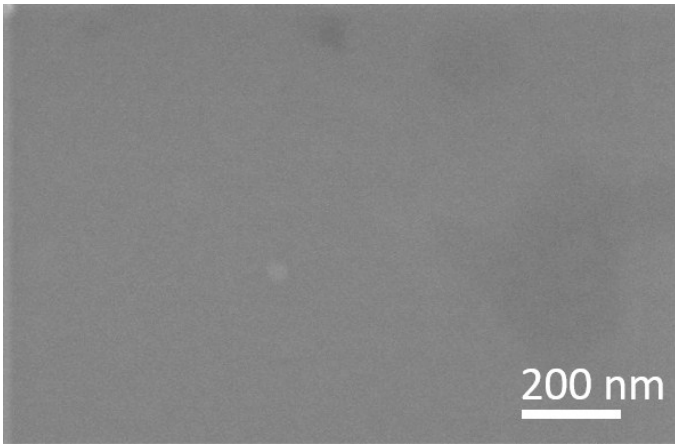

Figure S2. SEM image of the Si wafer surface at 40 s microwave irradiation which is before the incubation time (43 s). The surface has no reaction product.

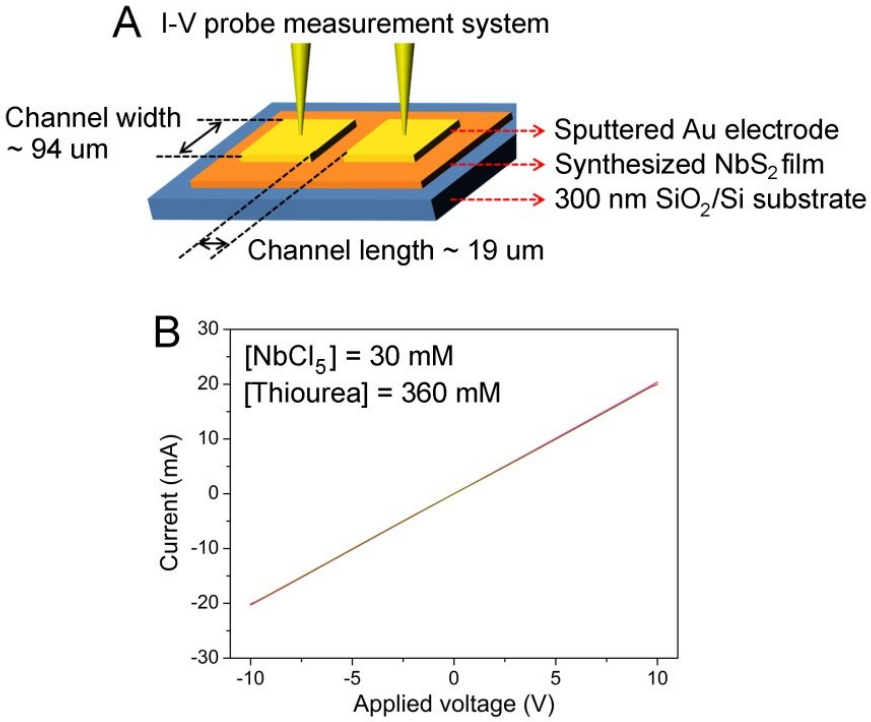

Figure S3. Electrical property of the NbS_2 film. (A) Schematic illustration of sample preparation and measurement. (B) I-V profile obtained from the NbS_2 film synthesized with precursor concentration of [$NbCl_5$]: [thiourea] = 30: 360 mM.

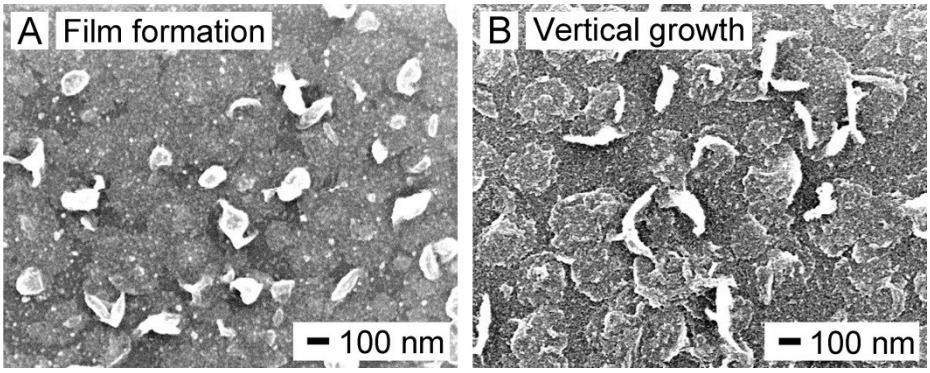

Figure S4. Top-view SEM images of $NbSe_2$ film in the film formation stage (A) and in the vertical growth stage (B).

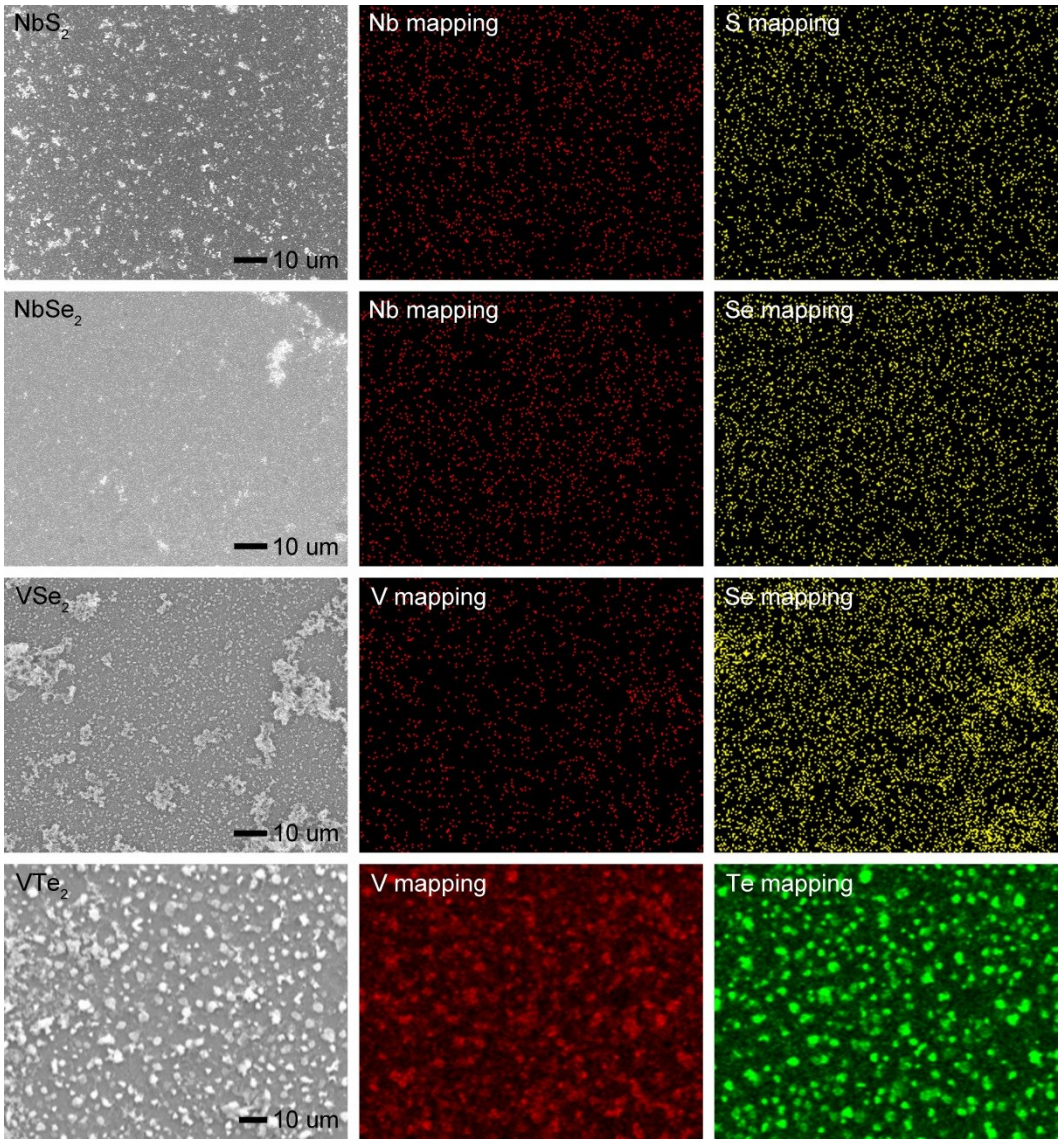

Figure S5. SEM images and corresponding EDS-mapping images of the as-synthesized films of NbS_2, $NbSe_2$, VSe_2, and VTe_2.

Table S1. Elemental composition obtained from EDS mapping of the as-synthesized films of NbS_2, $NbSe_2$, VSe_2, and VTe_2.

Materials	**Elemental compositions**
NbS_2	Nb : S = 1 : 1.68
$NbSe_2$	Nb : Se = 1 : 0.31
VSe_2	V : Se = 1 : 2.41
VTe_2	V : Te = 1 : 0.71