Supporting Information

Liquid-Phase Intermediated Chemical Vapor Deposition for Ternary Compositional 1D van der Waals Material $Nb_2Pd_3Se_8$

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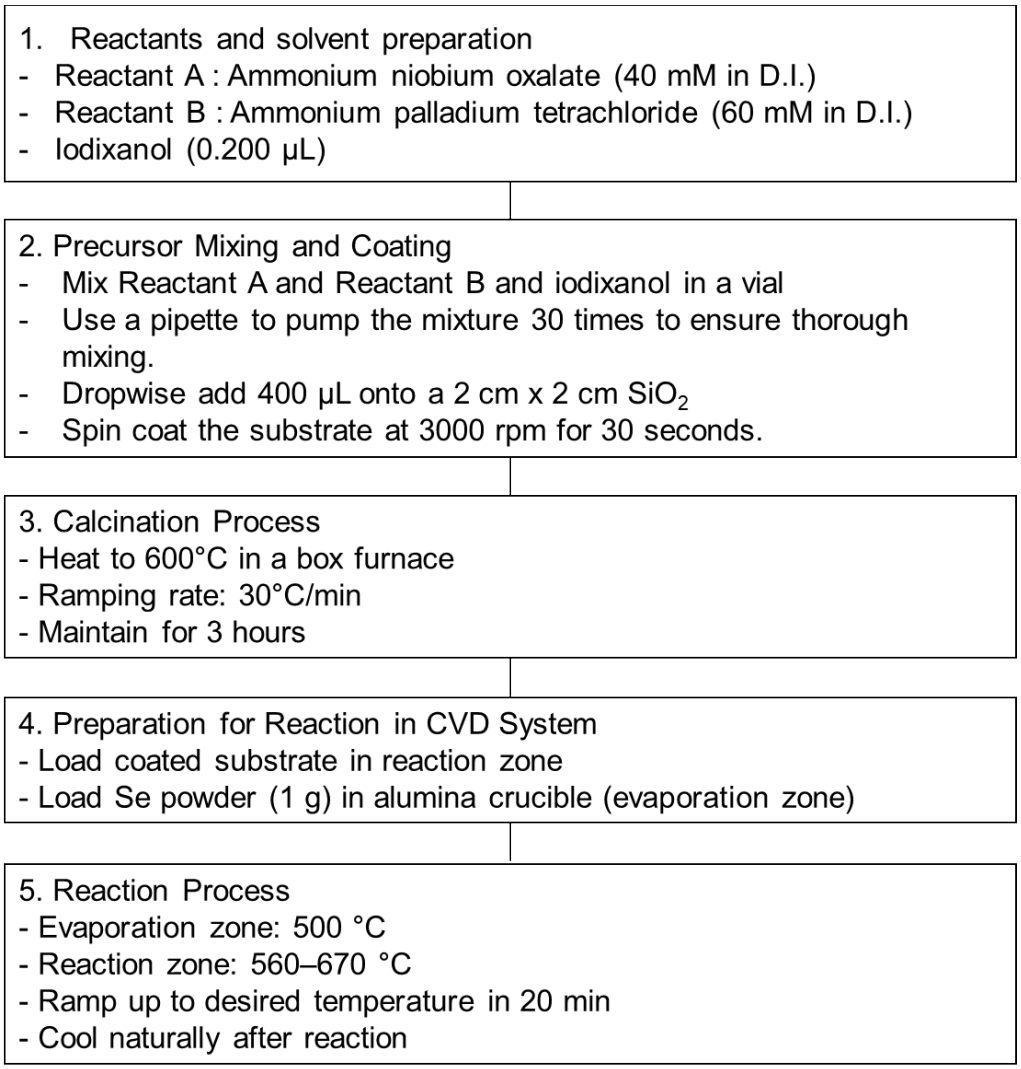


Fig. S1 Schematic diagram of the $Nb_2Pd_3Se_8$ nanowire growth using the LPI-CVD process

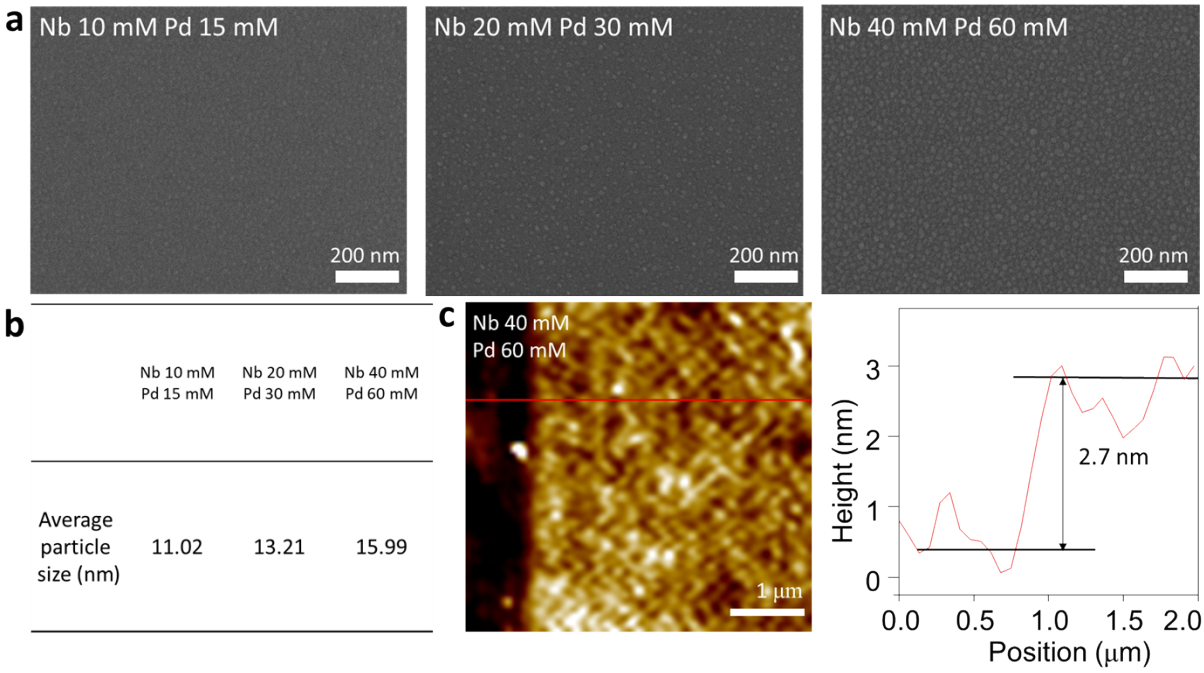


Fig. S2 Morphology of precursor coated substrate. (a) SEM image of the as-prepared coating with different molar concentrations of Nb: Pd precursor solution. (b) A table showing the average size of the particles based on the molar concentration of the precursor solution. (c) AFM images of the coating with Nb 40 mM and Pd 60 mM precursor solution.

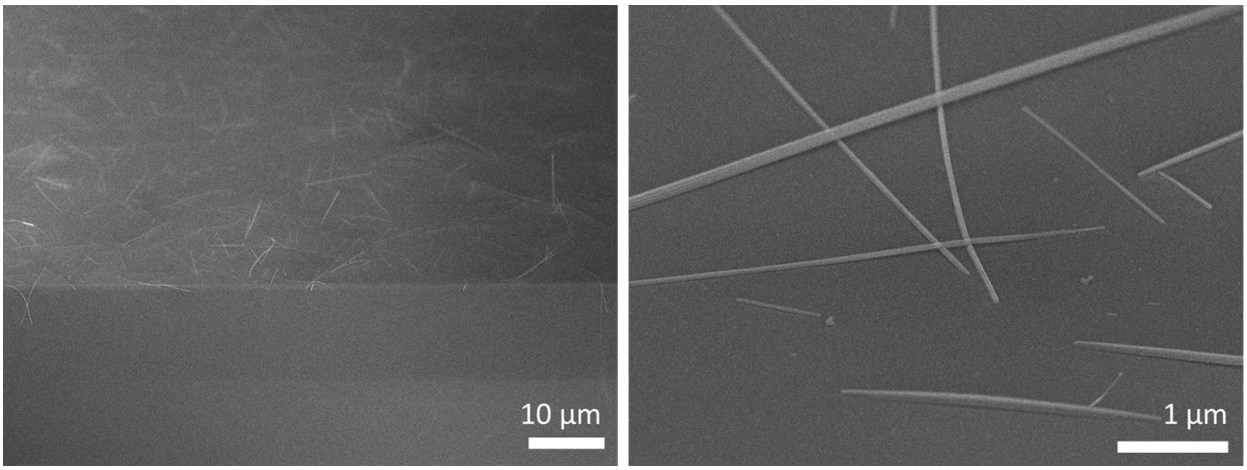


Fig. S3 Cross section-SEM images of $Nb_2Pd_3Se_8$ nanowires grown on the substrate.

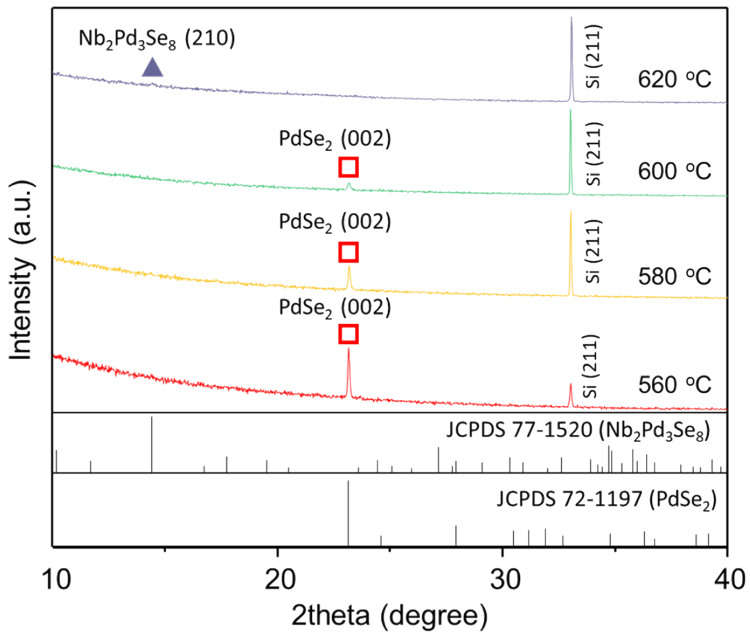
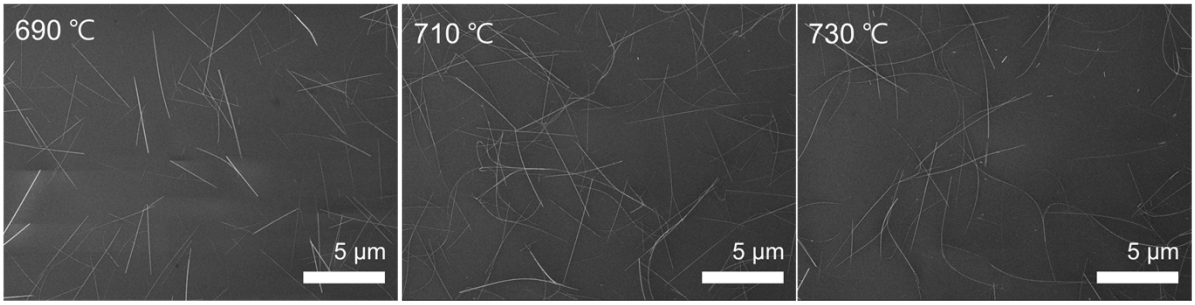


Fig. S4. (a) XRD patterns after the LPI-CVD process at 560, 580, 600, and 620 °C

a



b

Process Temperature (C°)	630	650	670	690	710	730
Wire length average (nm)	2.29	3.91	4.91	11.55	15.04	13.8
Wire width average (μm)	70.35	75.91	58.84	40.57	51.14	52.68
Aspect ratio	32.5	51.4	83.4	284.7	292.7	263.5

Fig. S5 (a) SEM images of $Nb_2Pd_3Se_8$ synthesized by LPI-CVD at 690 , 710, 730 °C (b) Process temperature-dependent wire length, width, and aspect ratio of CVD grown $Nb_2Pd_3Se_8$ nanowires..

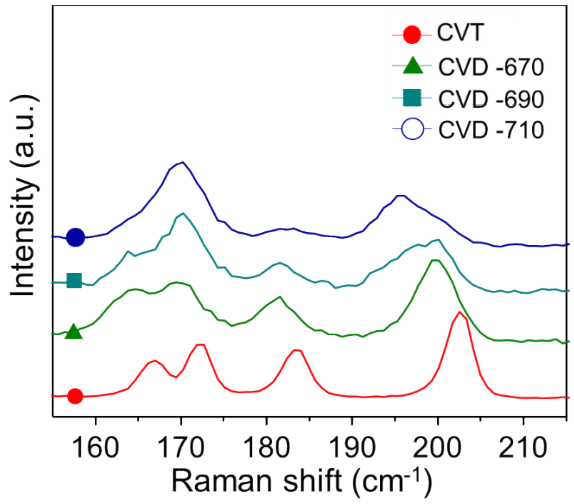


Fig. S6 Comparison of Raman spectra for different synthesis methods of $Nb_2Pd_3Se_8$.

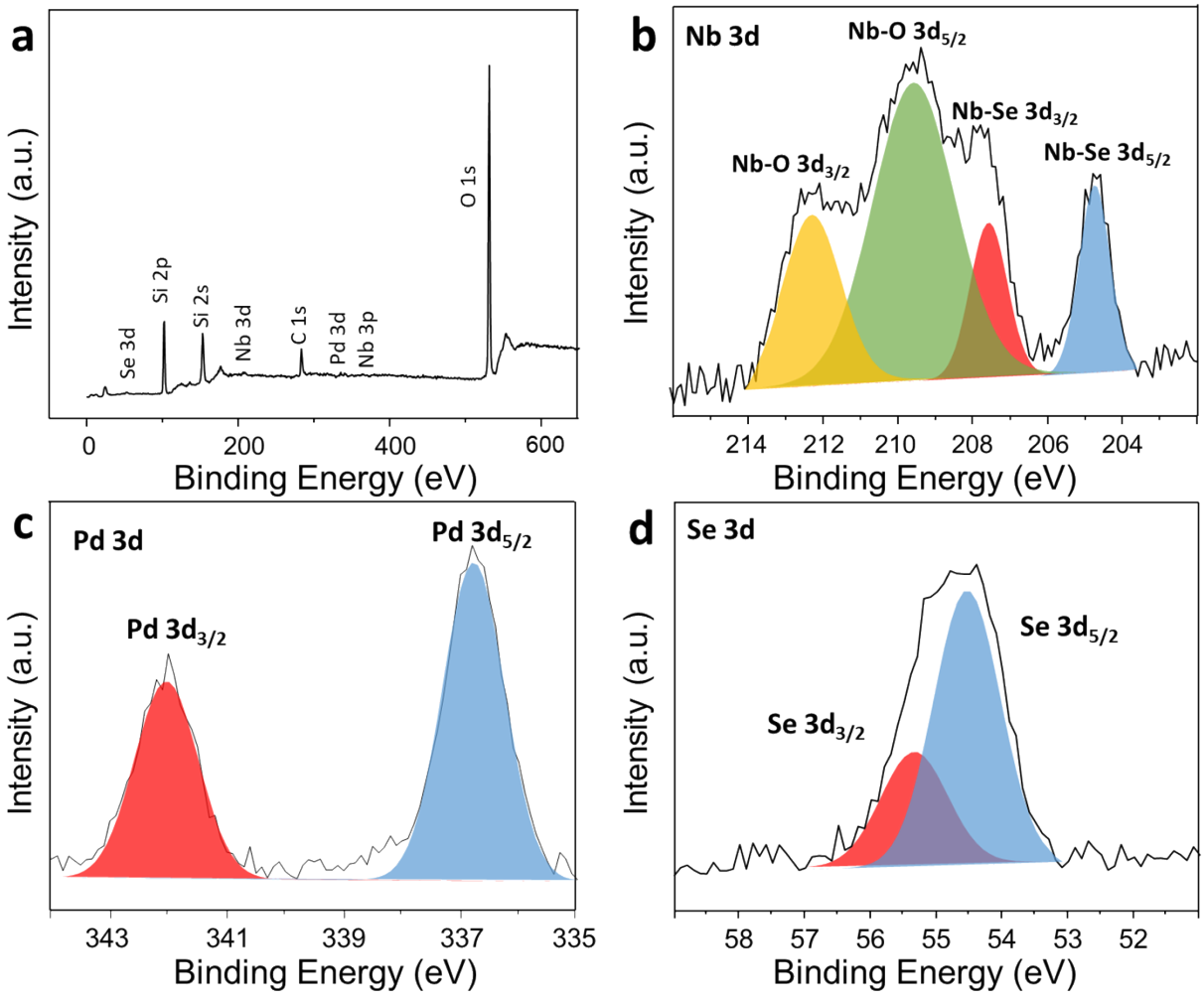


Fig. S7 XPS analysis of $Nb_2Pd_3Se_8$ on SiO_2 (a) XPS spectrum of CVD-grown $Nb_2Pd_3Se_8$. (b)-(d) Core level XPS spectra of the Nb 3d, Pd 3d and Se 3d regions.

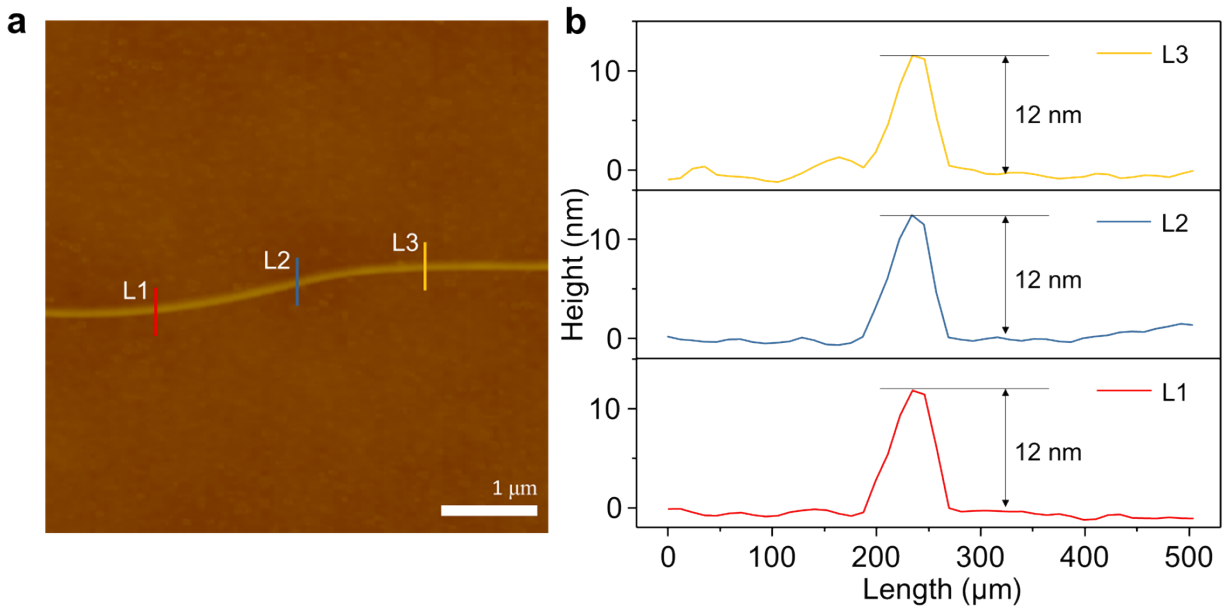


Fig. S8 Dimension of FET device channel material. (a) AFM image and (b) height profile.