Electronic Supplementary Information

Surfactant-free co-solvent exfoliation strategy of semiconducting quasi-1D $Nb_2Pd_3Se_8$ nanowires

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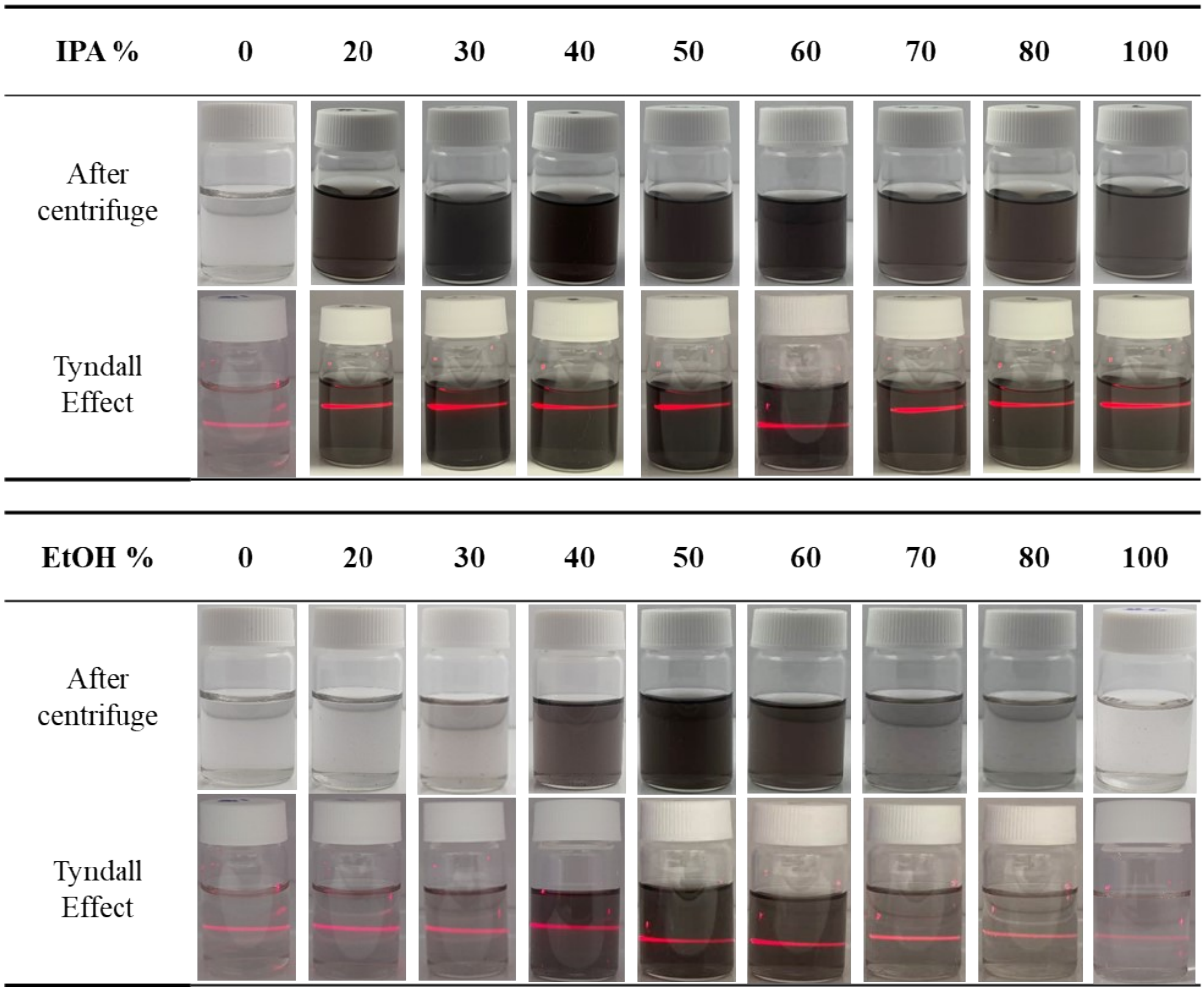


Fig. S1 Photographs of $Nb_2Pd_3Se_8$ dispersions in all cosolvent system after centrifugation at 6,000 rpm; IPA-water (top) and EtOH-water (bottom).

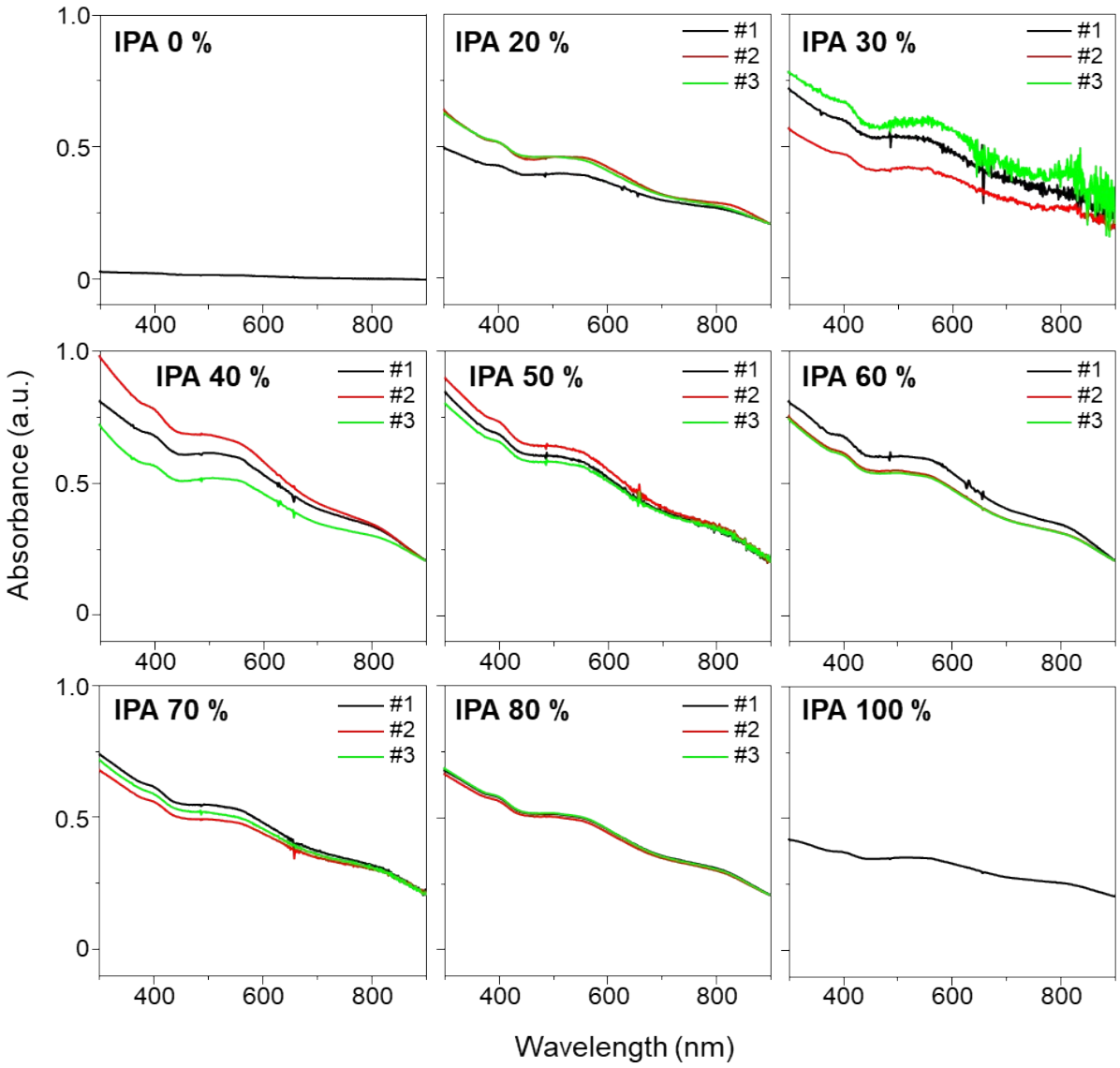


Fig. S2 UV-visible absorbance spectra of $Nb_2Pd_3Se_8$ dispersions processed in IPA-water co-solvent.

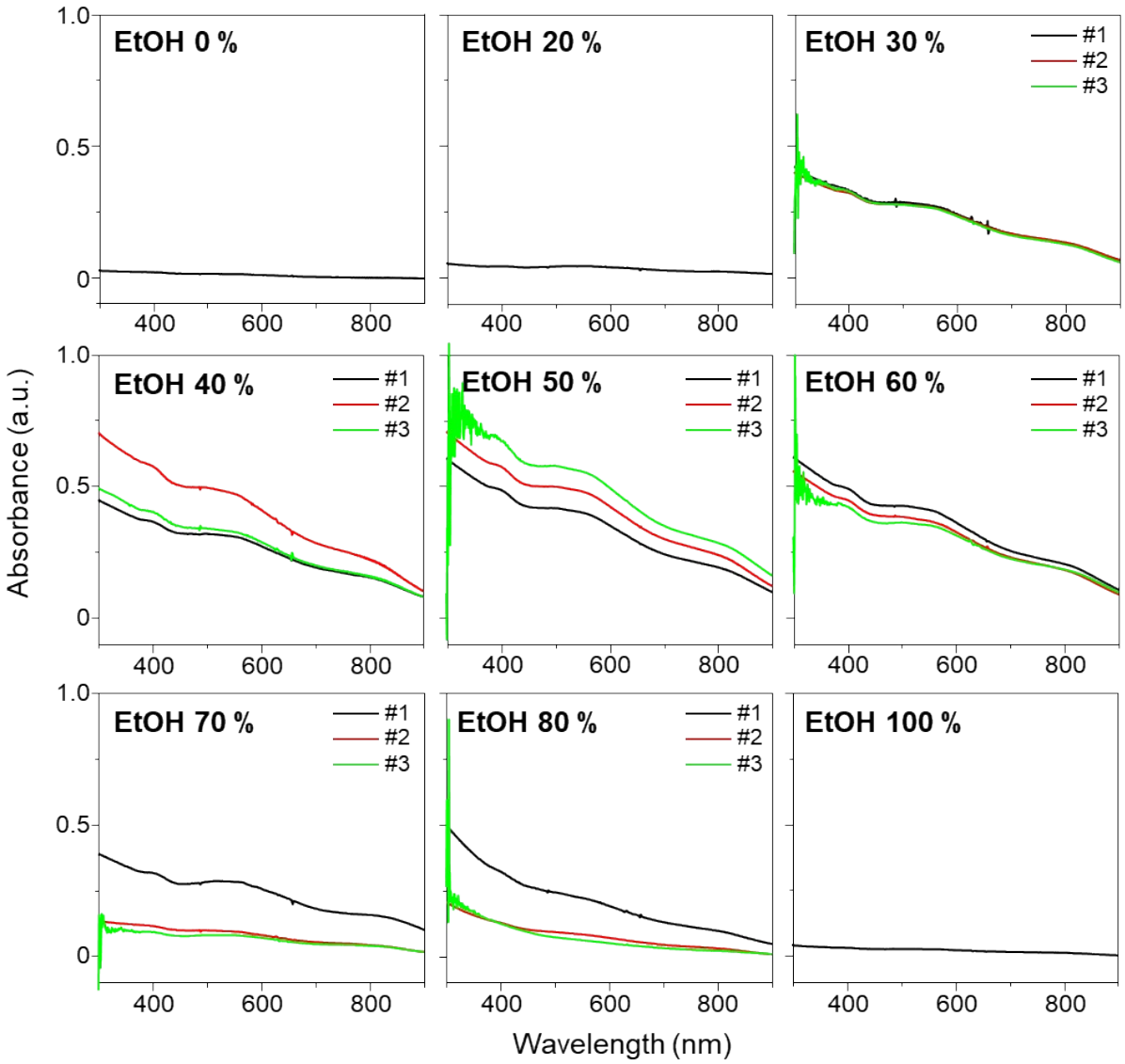


Fig. S3 UV-visible absorbance spectra of $Nb_2Pd_3Se_8$ dispersions processed in EtOH-water co-solvent.

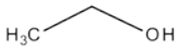
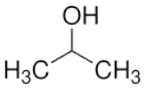
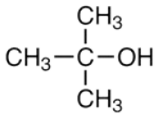
Alcohol	Molecular structure	Molecular weight (g mol^{-1})	# of $–CH_3$
Ethyl alcohol (EtOH)		46.068	1
Isopropyl alcohol (IPA)		60.1	2
Tert-butyl alcohol (TBA)		74.12	3

Fig. S4 Information of alcohols used as co-solvents in liquid exfoliation of $Nb_2Pd_3Se_8$

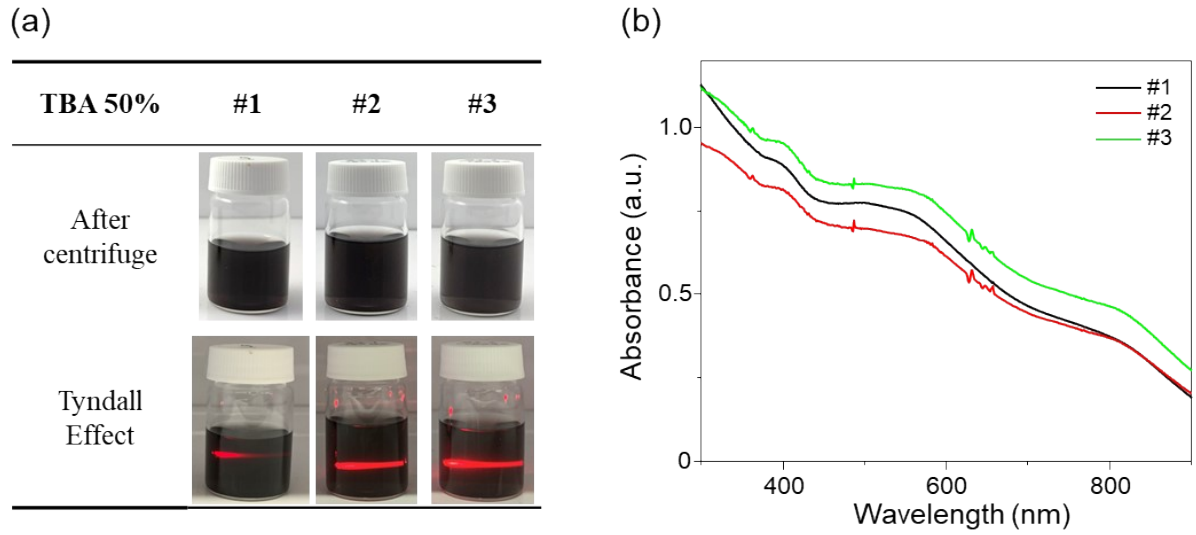


Fig. S5 Exfoliation results in TBA-water co-solvent. (a) Photographs of $Nb_2Pd_3Se_8$ dispersions in TBA 50% after centrifugation at 6,000 rpm. (b) UV-visible absorbance spectra of the $Nb_2Pd_3Se_8$ dispersions.

Solvents	Absorbance	Width (nm)
IPA 20%	0.514	31.3 ± 5.9
IPA 50%	0.684	21.0 ± 5.4
IPA 70%	0.585	29.7 ± 4.4
IPA 100%	0.371	35.8 ± 13.4
EtOH 30%	0.330	51.6 ± 16.5
EtOH 50%	0.575	30.4 ± 7.9
EtOH 80%	0.128	100.3 ± 37.9
NMP	0.633	23.4 ± 7.0

Fig. S6 Summary of the absorbance and average nanowire widths of different solvent compositions.

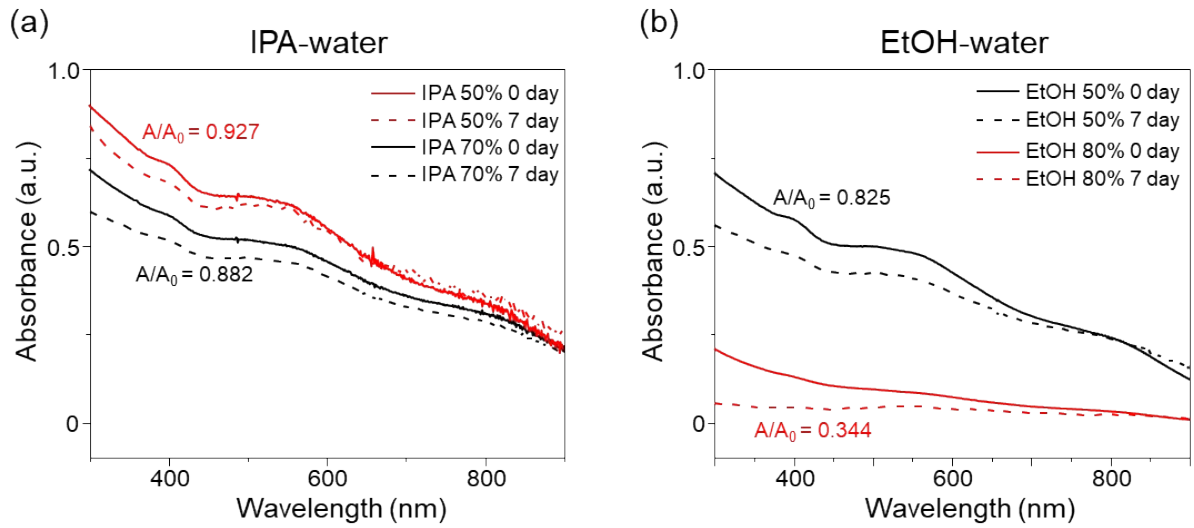


Fig. S7 Dispersion stability of $Nb_2Pd_3Se_8$ dispersions exfoliated in (a) IPA-water and (b) EtOH-water.

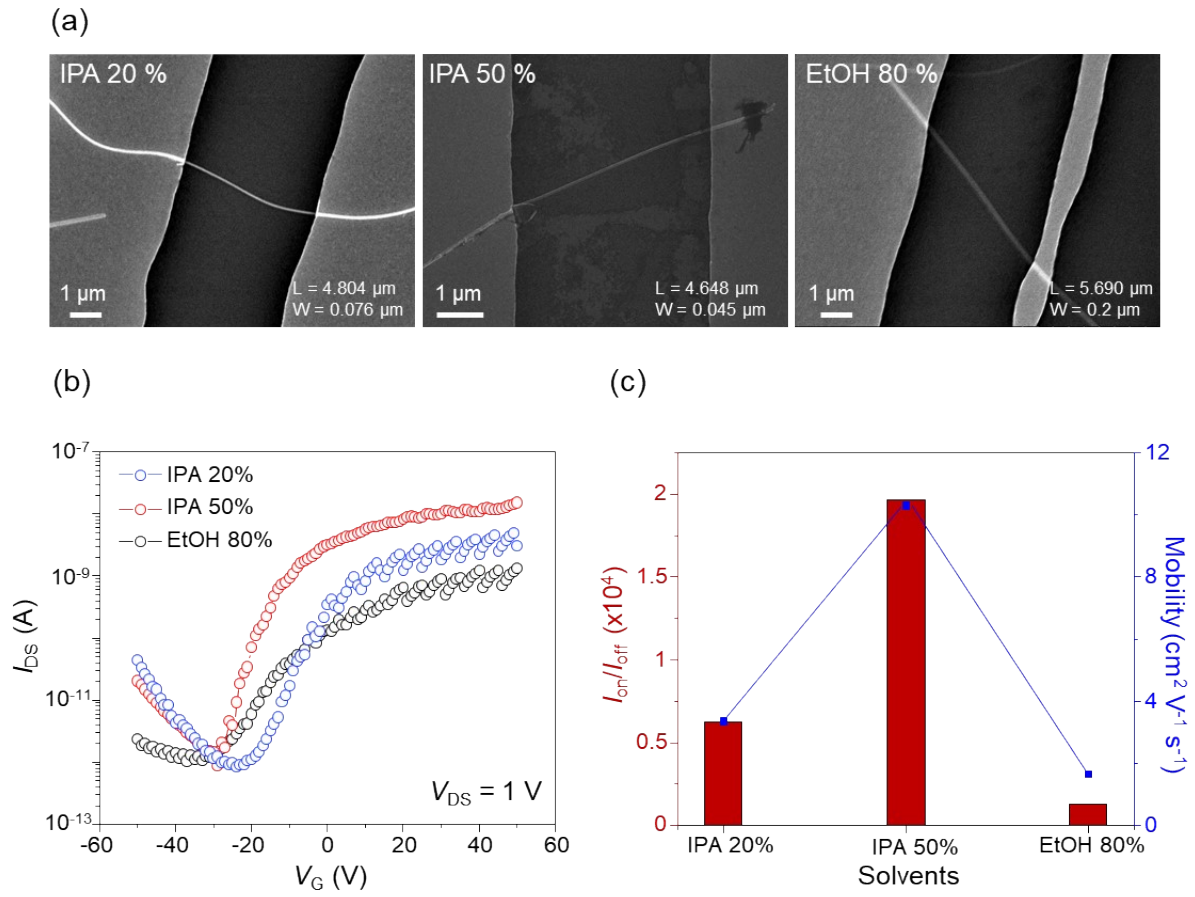


Fig. S8 (a) SEM images of $Nb_2Pd_3Se_8$ nanowires obtained from different co-solvent compositions. (b) Transfer curves of the devices. (c) Measured I_{on}/I_{off} and mobility of the devices.