Solution-phase controlled synthesis of Cu_3NbSe_4 nanocrystals for optoelectronic applications

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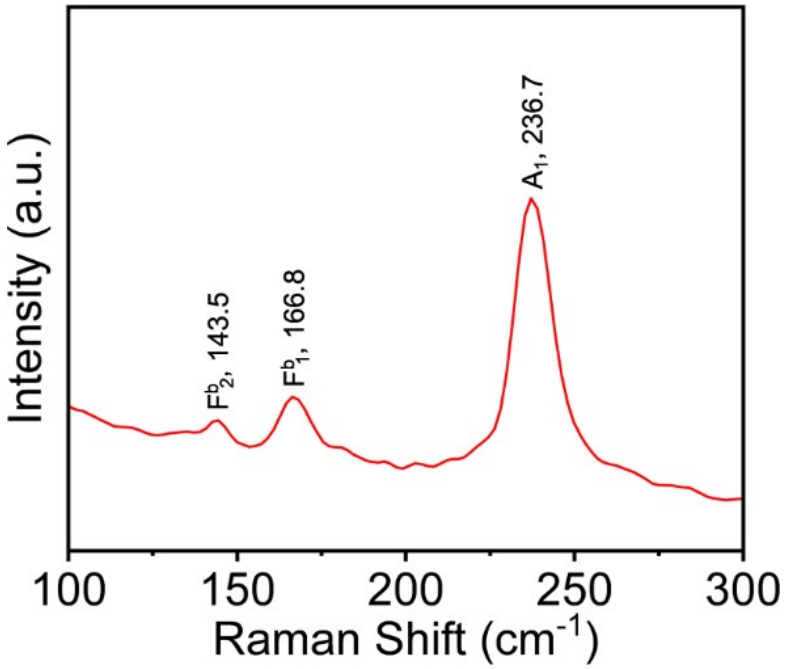

Fig. S1 Raman spectrum of the as-synthesized Cu_3NbSe_4 nanocrystals.

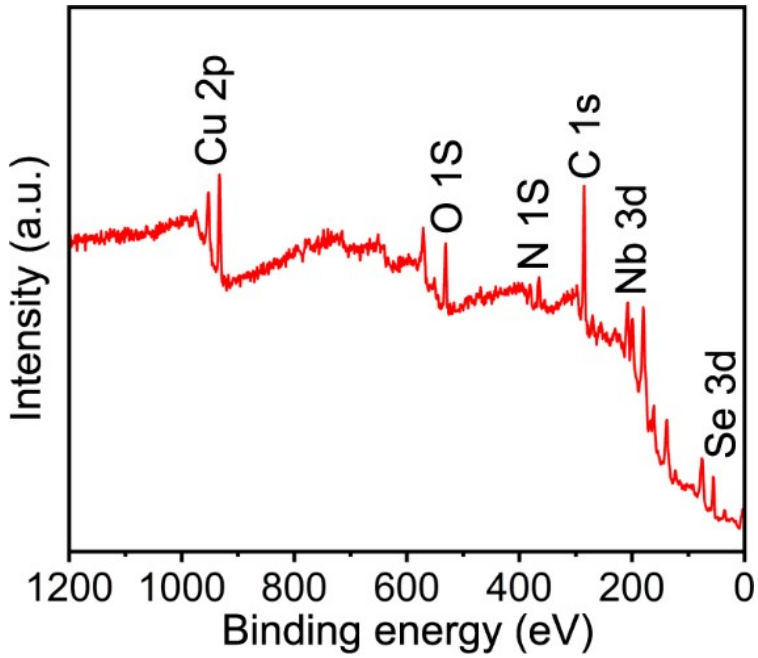

Fig. S2 XPS survey spectrum of the as-synthesized Cu_3NbSe_4 nanocrystals.

In this work, The XPS peak fitting is performed by XPSPEAK software using a Gaussian-Lorentzian peak shape and a Shirley background.

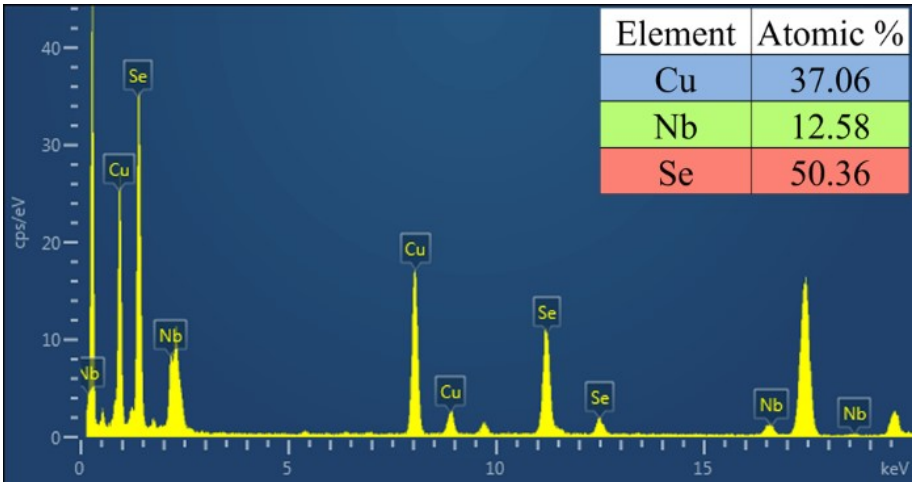

Fig. S3 EDX spectrum of the as-synthesized Cu_3NbSe_4 nanocrystals.

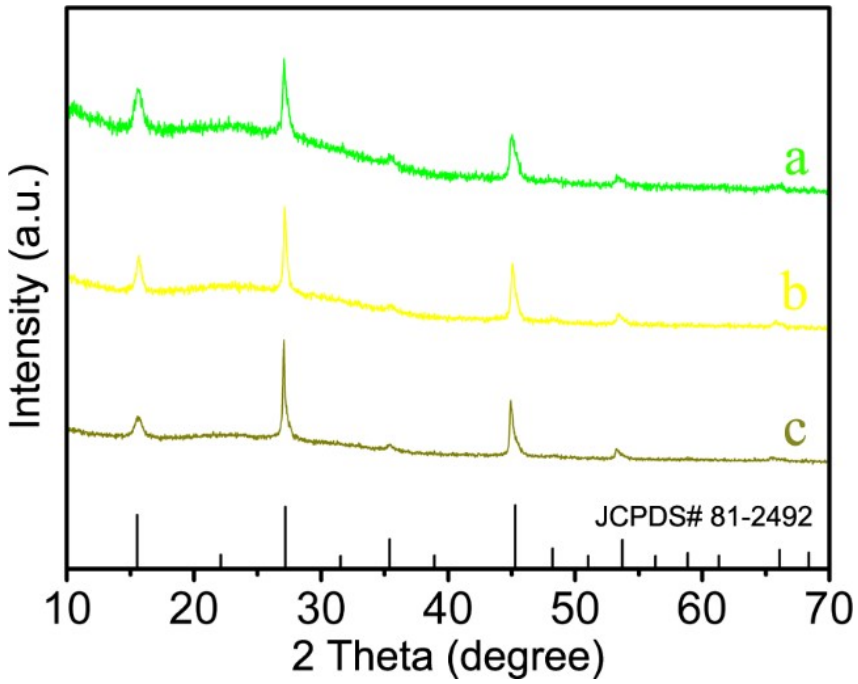

Fig. S4 XRD patterns of the resulting products at 280 ℃ for 30 min with the increasing of the concentration of OA: (a) in OAm (7.6 mL) with OA (0.4 mL), (b) in OAm (7.2 mL) with OA (0.8 mL), and (c) in OAm (6.8 mL) with OA (1.2 mL).

Table S1. Comparison of the performances of visible light photodetectors.

Materials	Wavelength (nm)	External bias (V)	Response time (s)	ref.
CdTe	400	10	0.7/1	[1]
Sb_2SeTe_2	532	0.1	10	[2]
SnS_2	650	5	20/31	[3]
MoS_2	561	8	4/9	[4]
$V_{0.75}W_{0.25}Se_2$	670	0.3	1.8/2.9	[5]
$CuInSe_2$	700	0.5	10.5/8.4	[6]
Cu_3NbSe_4	400-780	1.0	0.3/0.1	this work

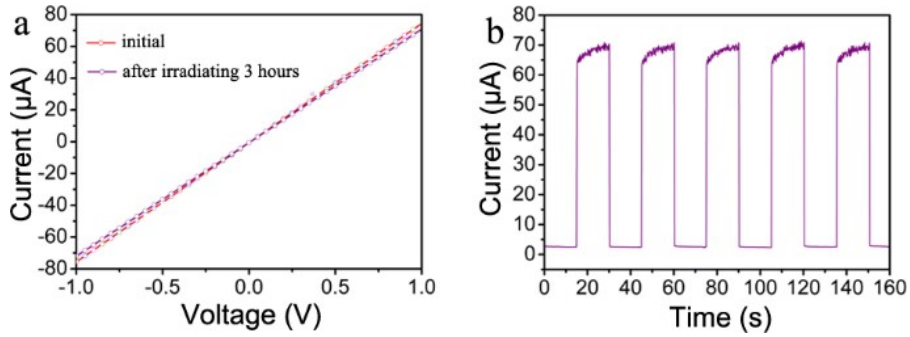

Fig. S5 (a) *I-V* curves of initial Cu_3NbSe_4 photodetector and the device after white light irradiating 3 hours measured in the light. (b) Temporal photoresponse of the device after white light irradiating 3 hours.

References

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