Supporting information

High-performance, fast-response photodetector based on hydrothermally synthesized $V_{1-x}Mo_xSe_2$ nanosheets

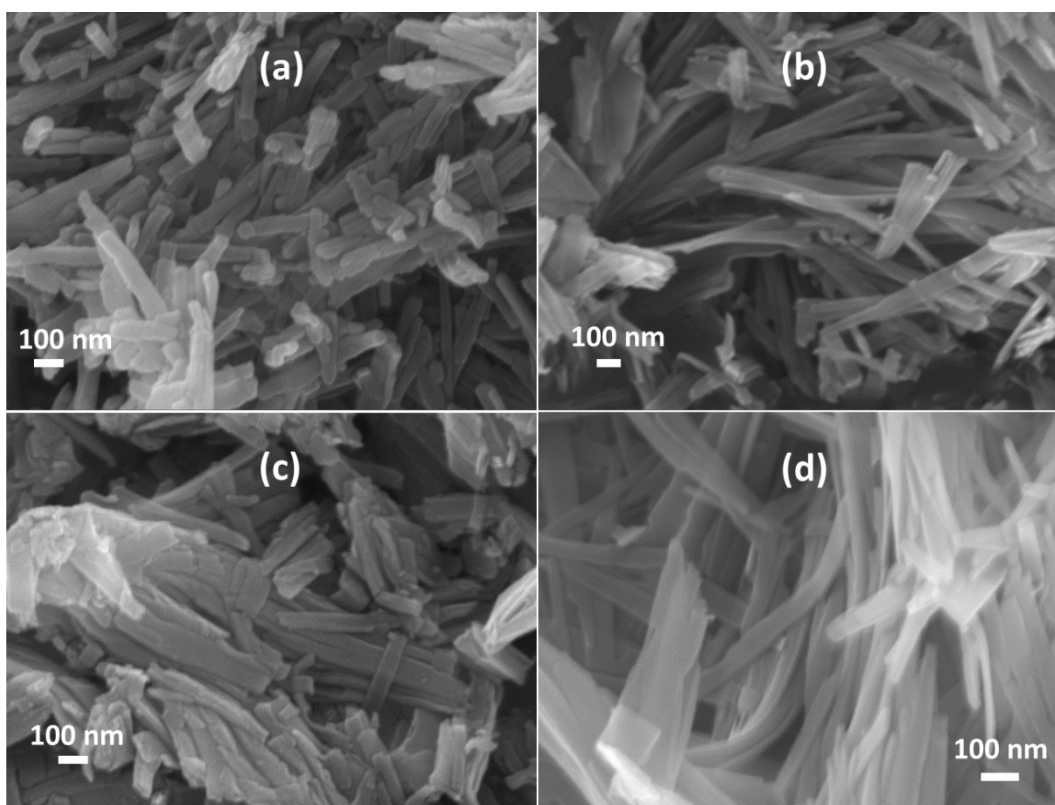Abinash Parida[1], Devarajan Alagarasan[2], Ramakanta Naik[1]*

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Fig. S1. Magnified FESEM images of (a) V2 sample, (b) V3 sample, (c) V4 sample, and (d) V5 sample in the nanometer scale for better understanding of the morphology of the prepared samples.
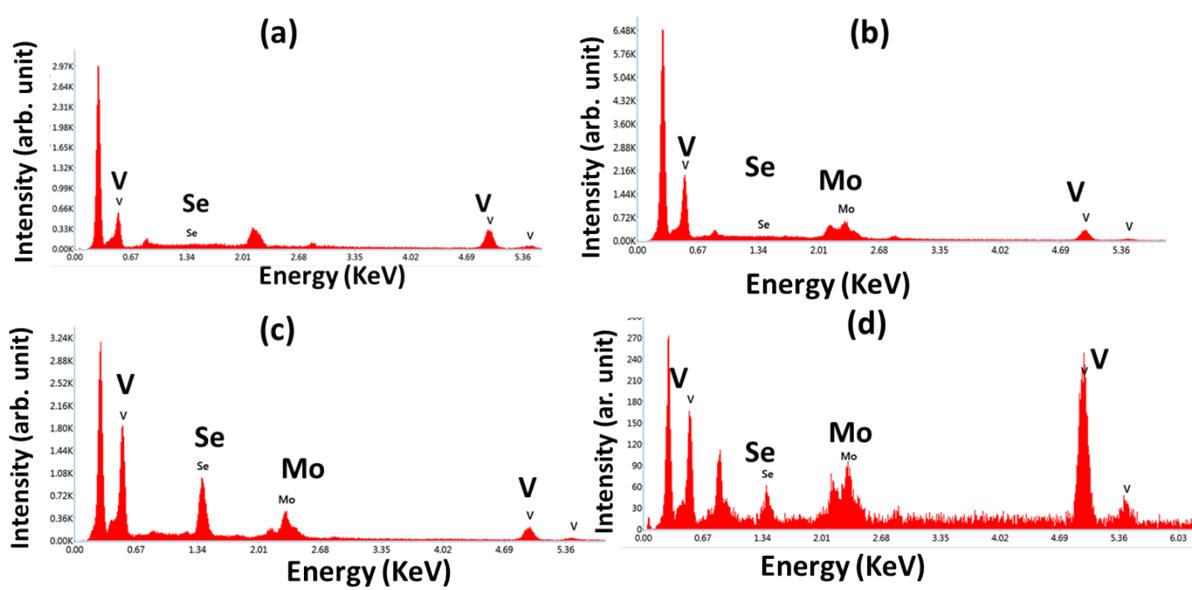
Fig. S2. Induvial EDX spectra of (a) V1 sample, (b) V2 sample, (c) V3 sample, and (d) V4 sample, which confirms the presence of all the compositional elements in the prepared samples.
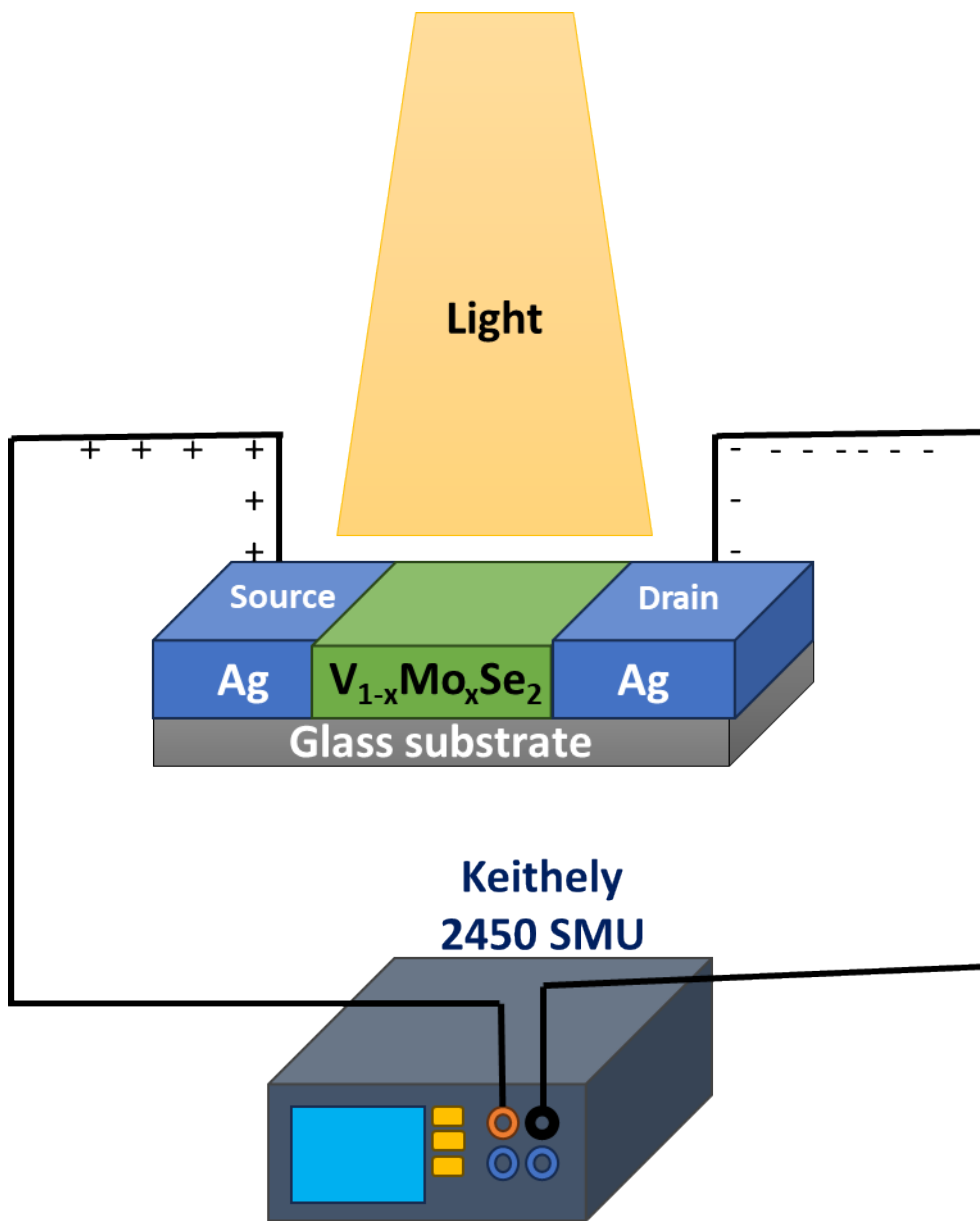
Fig. S3. Complete process of photo response measurement of the prepared samples.
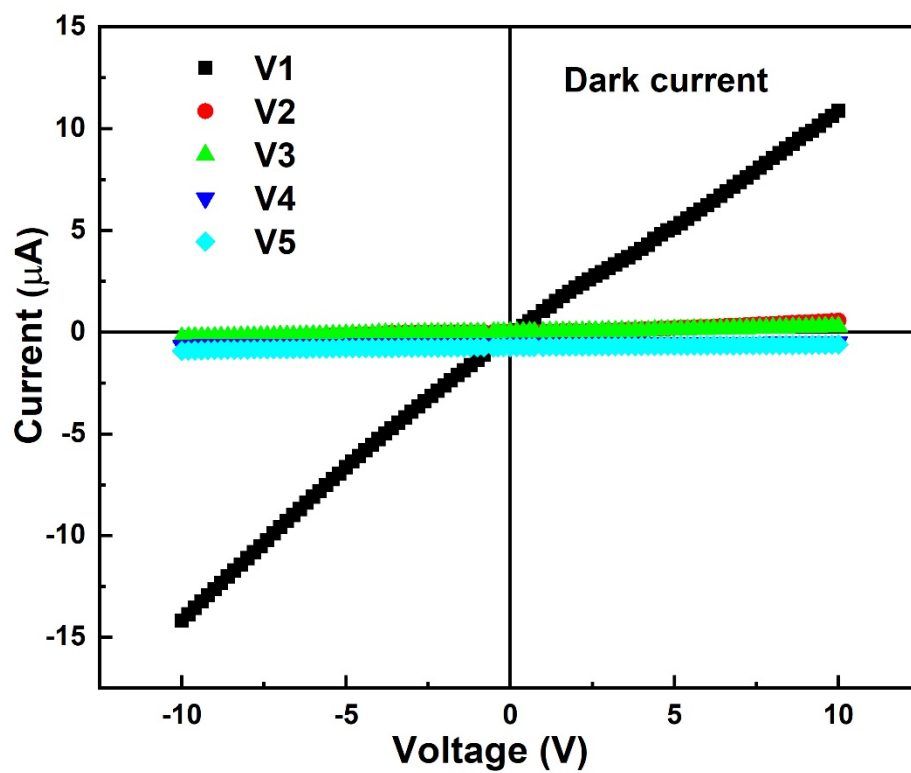
Fig. S4. I~V characteristics of all the prepared samples, showing the dark current where voltage sweeps between -10 V to +10 V.
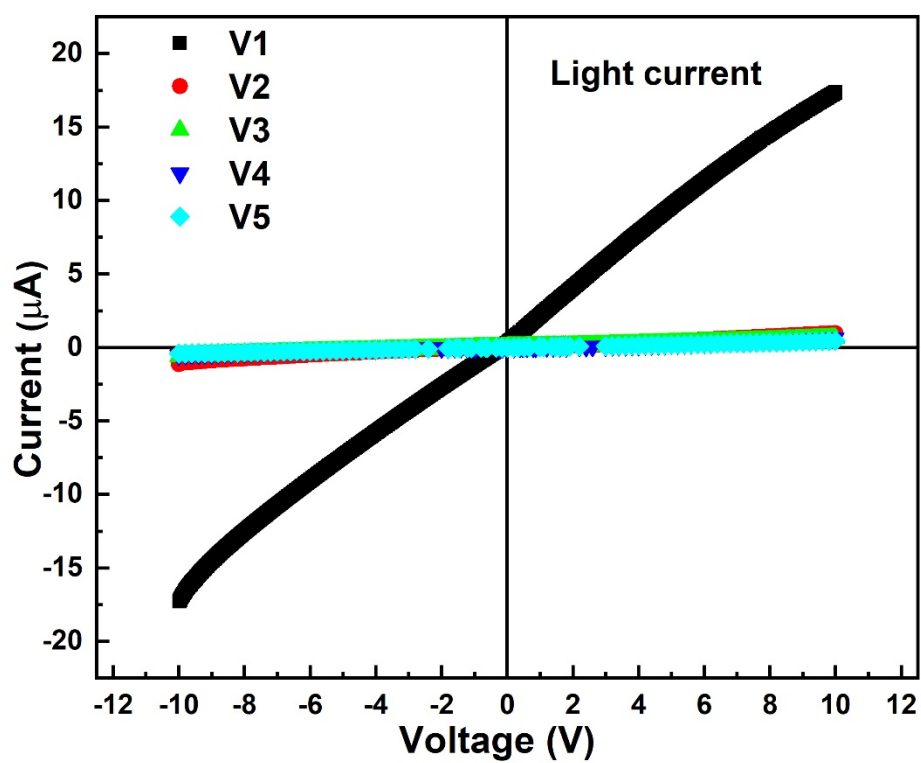
Fig. S5. I~V characteristics of all the prepared samples, showing the light current where voltage sweeps between -10 V to +10 V.
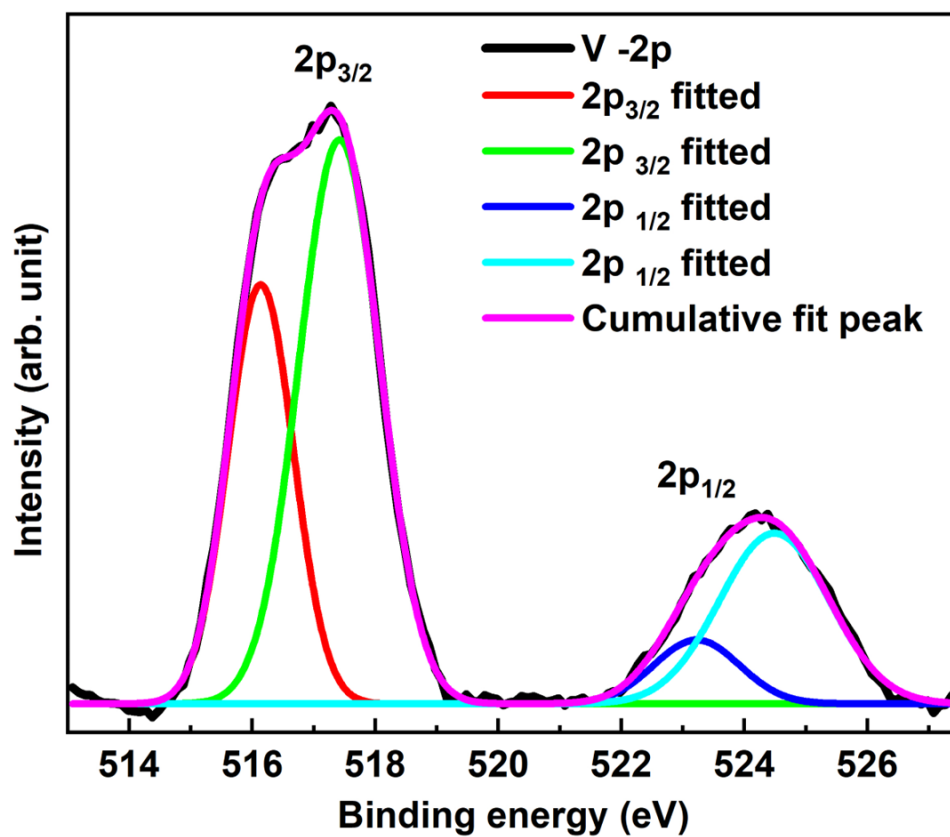
Fig. S6: XPS fitting curve of vanadium 2p for the sample V1.

Table S1. Showing the atomic percentage of constituent elements of all the prepared samples.

Sample	V1	V2	V3	V4	V5
Element	At. %	At. %	At. %	At. %	At. %
V	38.6	37.2	36.9	35.4	34.1
Mo	0	2.1	3.4	6.1	8.2
Se	61.4	60.7	59.7	58.5	57.7
Total	100.00	100.00	100.00	100.00	100.00