Supporting Information (SI)

Spatially branched CdS-Bi₂S₃ heteroarchitecture: Single step hydrothermal synthesis approach with enhanced field emission performance and highly responsive broadband photodetection

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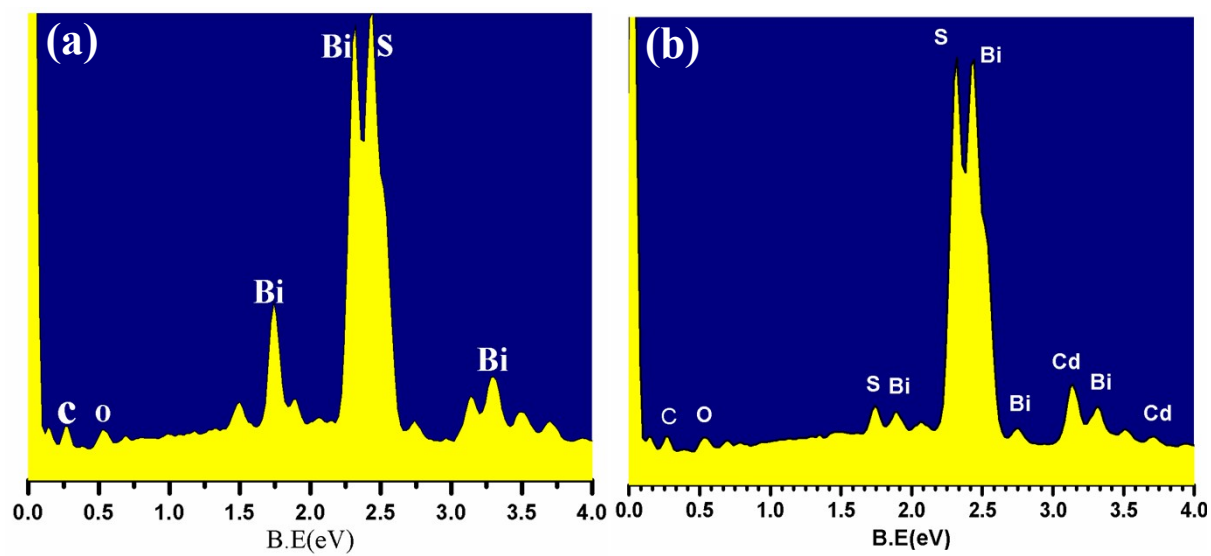
Figure S1:

Figure S1: Energy dispersive analysis of X-Rays (EDAX) plot of the as synthesized (a) Bi_2S_3 nanoflowers and (CdS-Bi_2S_3) heteroarchitecture.
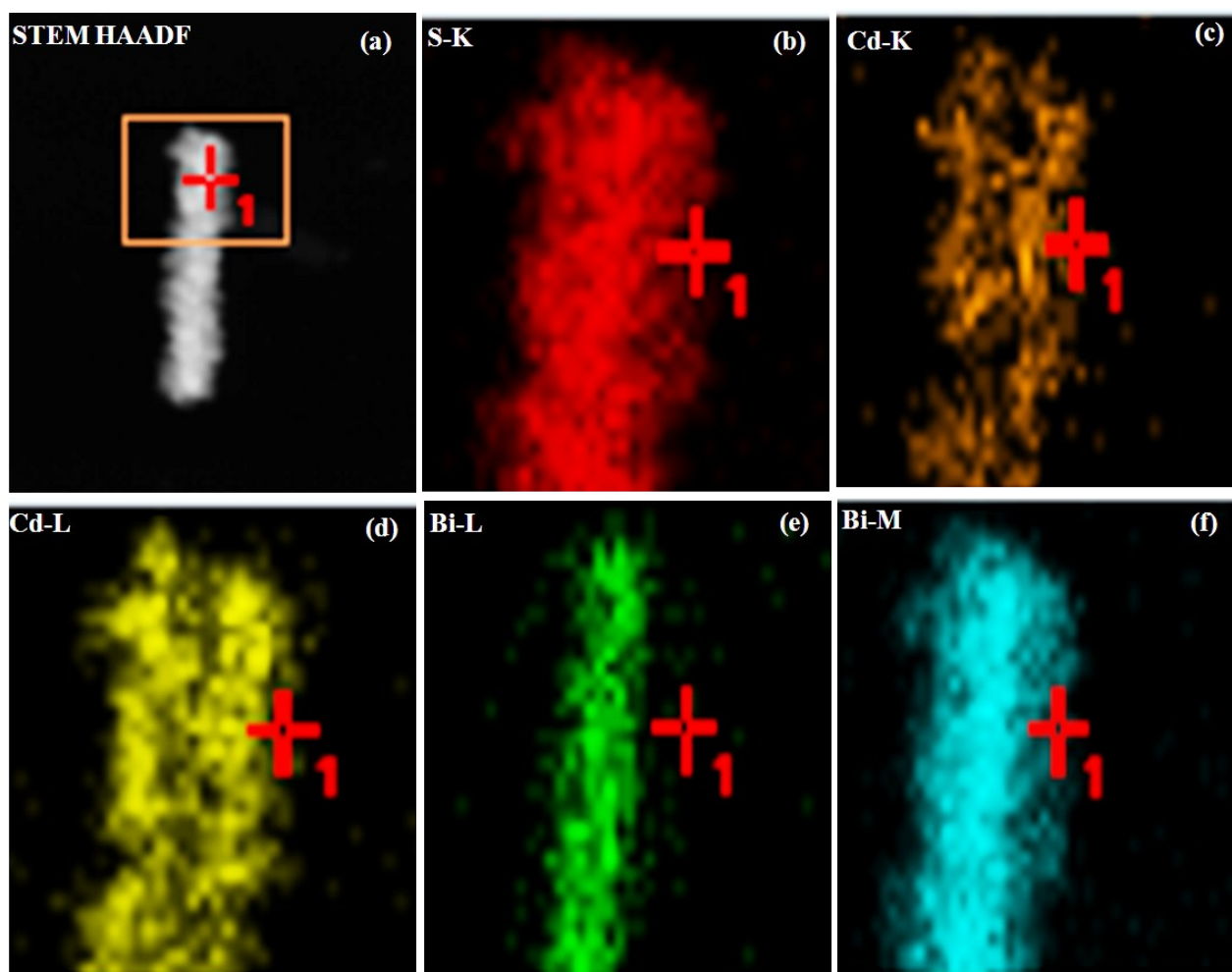
Figure S2:

Figure S2: Scanning Transmission Electron Microscope-Half Angle Annular dark Field (STEM-HAADF) images which enlighten the elemental distribution of one isolate CdS-Bi$_2$S$_3$ heteroarchitecture for elemental mapping.
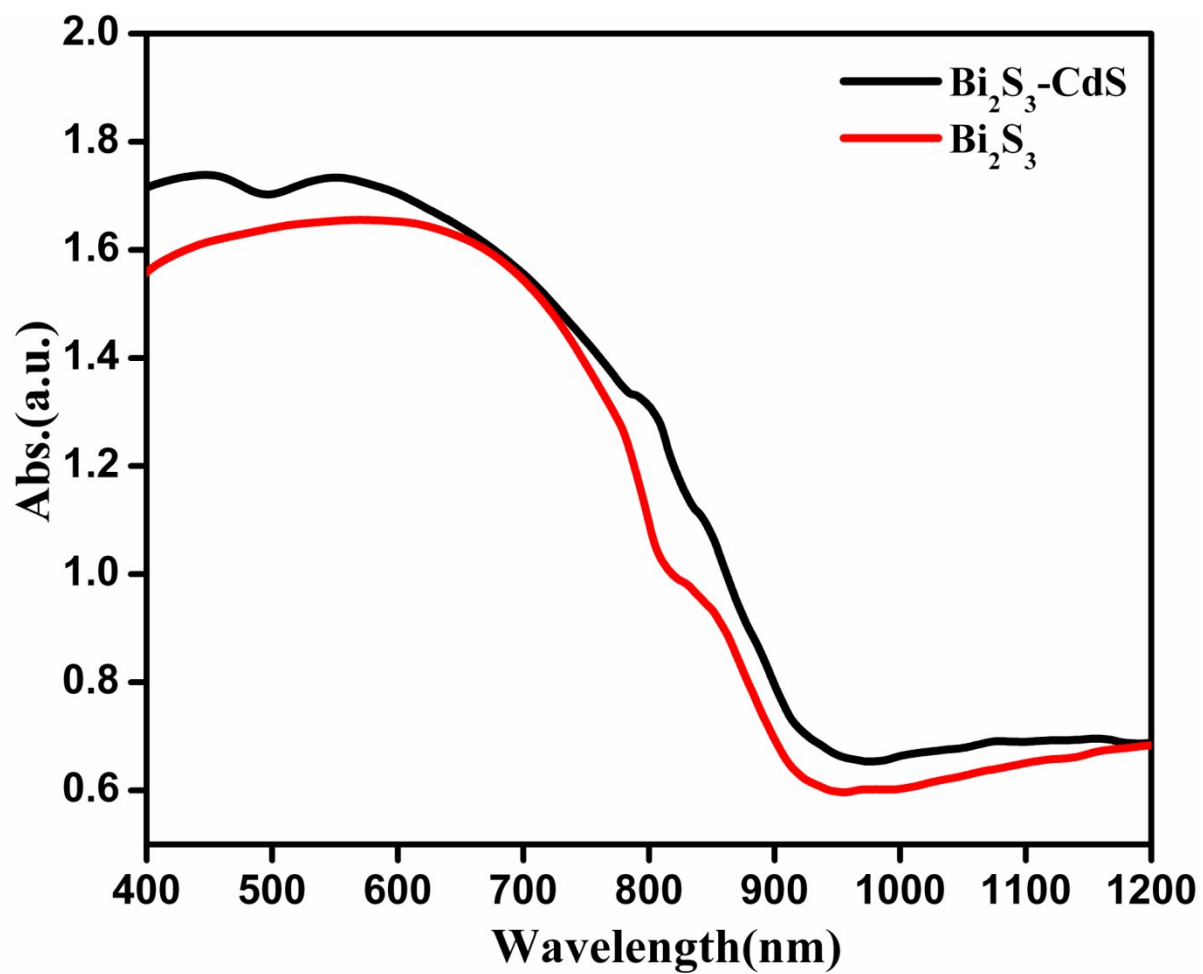
Figure S3:

Figure S3: UV-Visible spectrum for Bi_2S_3 nanoflower and (CdS-Bi_2S_3) heteroarchitecture.
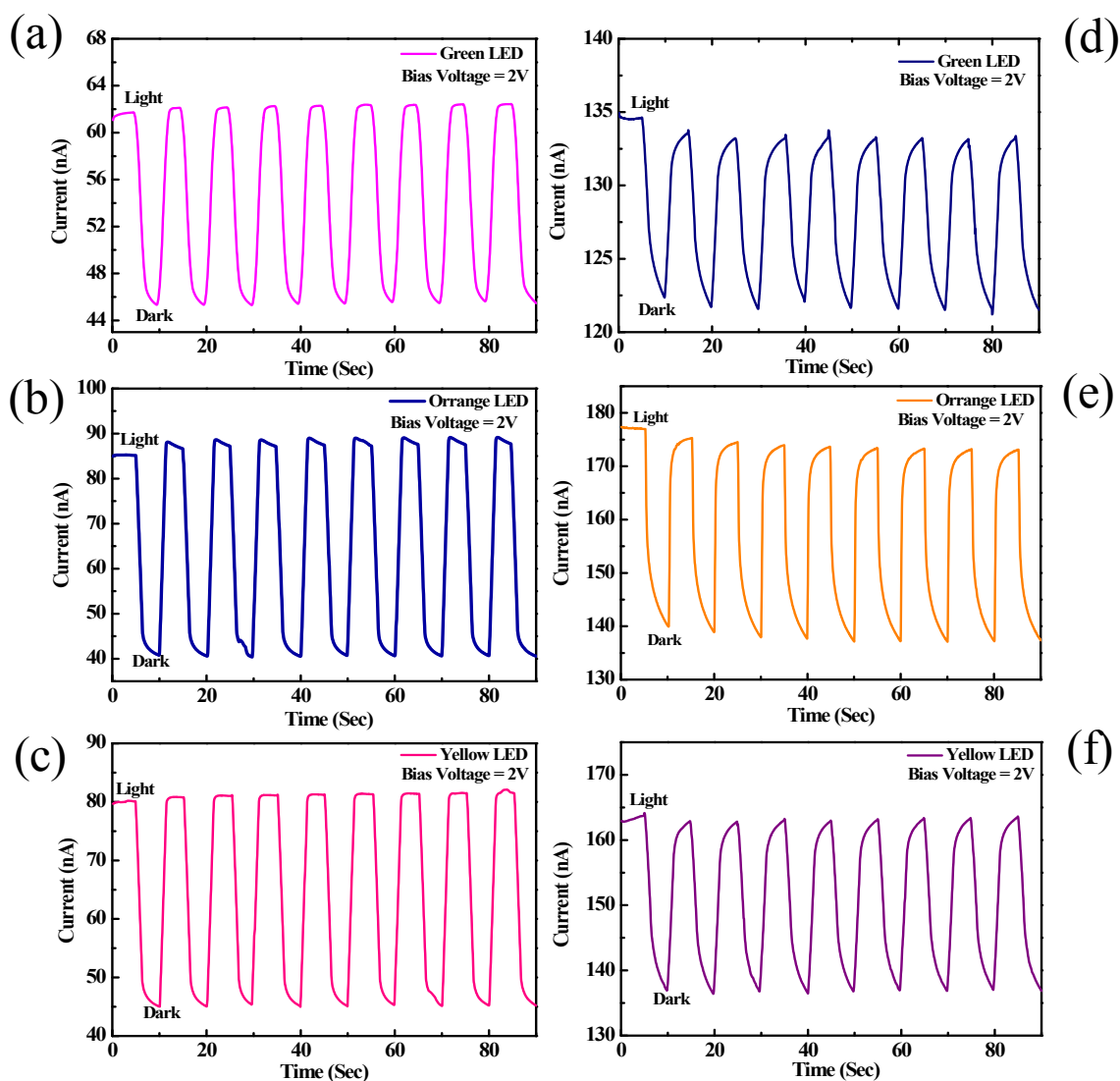
Figure S4:

Figure S4: (a), (b) and (c) Typical I-t plot under the illumination of Green, orange and Yellow LED's respectively for Bi$_2$S$_3$ photosensor. Figure (d), (e) and (f) shows the typical I-t plot under the illumination of Green, Orange and Yellow LED's respectively for CdS-Bi$_2$S$_3$ photosensor.

LED Types	Bi$_2$S$_3$ photosensor		CdS-Bi$_2$S$_3$ photosensor	
	Response Time (Sec)	Recovery Time (Sec)	Response Time (Sec)	Recovery Time (Sec)
Green	2.7	4.85	4.7	4.68
Orange	1.55	5	2.6	4.65
Yellow	1.73	4.55	4.3	4.5

Table S1: Comparison between the calculated values of response and recovery time for the Bi$_2$S$_3$ and CdS-Bi$_2$S$_3$ photosensor under the light illumination of different LED's respectively with an applied bias of 2V.