

Supporting information

# Water-Based Bi<sub>2</sub>S<sub>3</sub> Nano-Inks Obtained with Surfactant-Assisted Liquid Phase Exfoliation and Their Direct Processing into Thin Films

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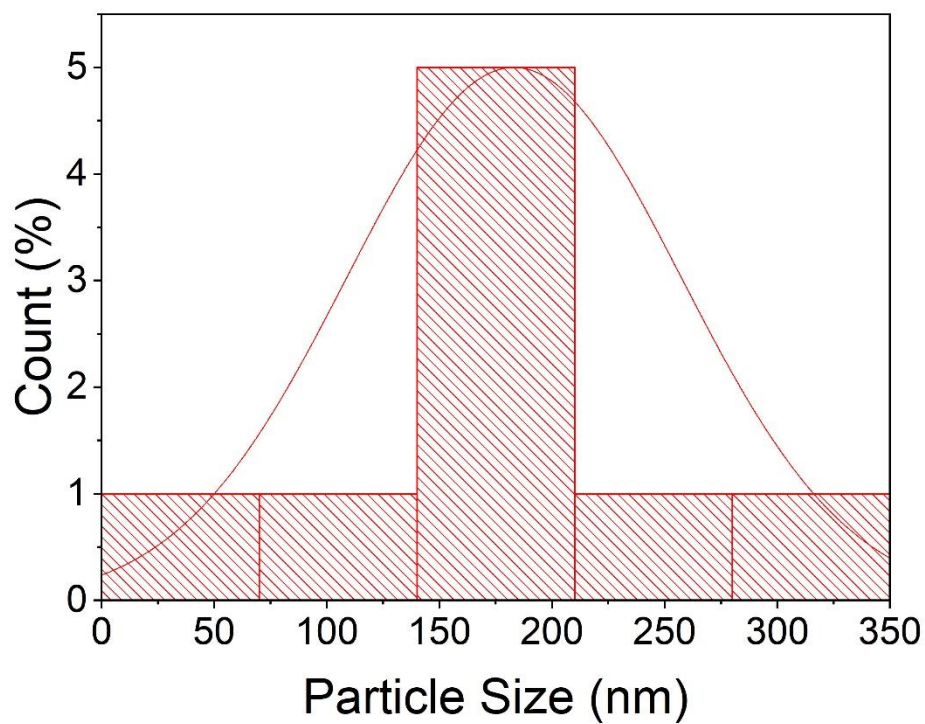
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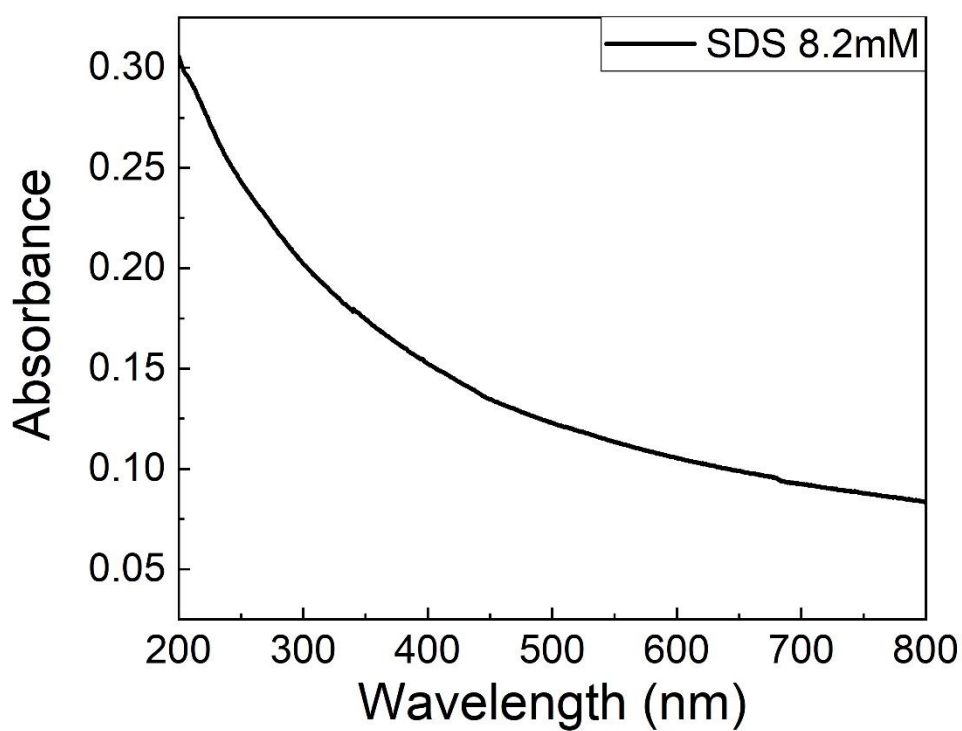
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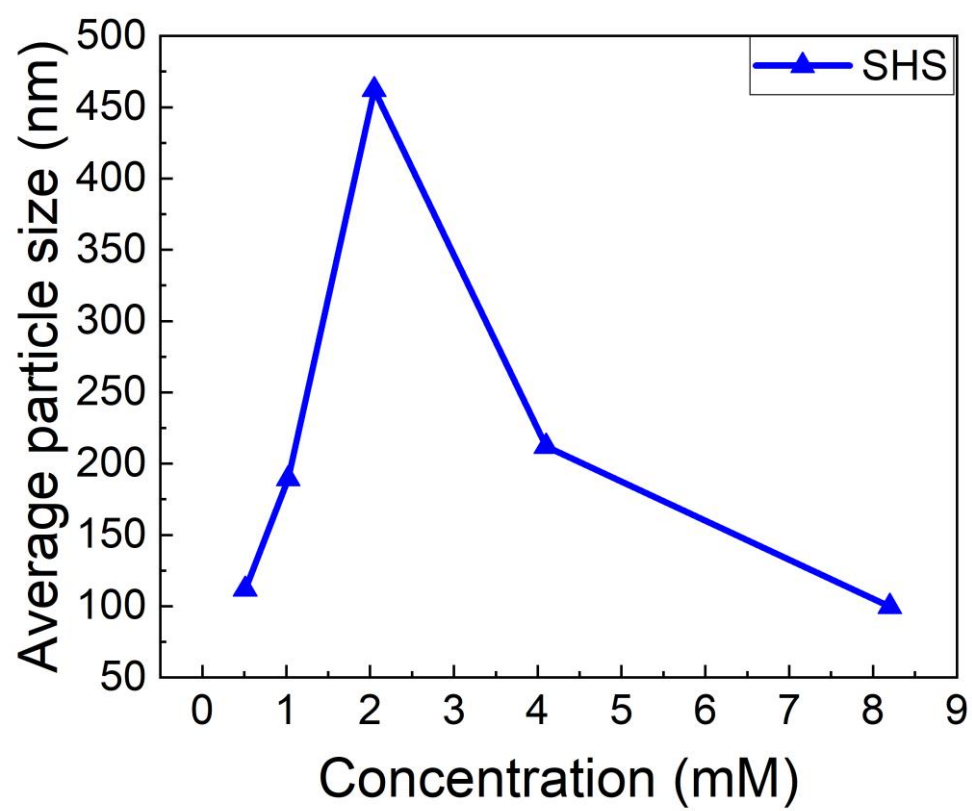
**Table S1:** Parameters of LPE process

14					
15	MC	Initial bulk concentration (mg/mL)	Surfactant	Surf. concentration (mM)	Exfoliation time
16					
17	Bi <sub>2</sub> S <sub>3</sub>	10	SDS	8.2	3 h
18				4.1	
19				2.0	
20				1.0	
21				0.5	
22	Bi <sub>2</sub> S <sub>3</sub>	10	SDBS	8.2	3 h
23				4.1	
24				2.0	
25				1.0	
26				0.5	
27					
28	Bi <sub>2</sub> S <sub>3</sub>	10	SHS	8.2	3 h
29				4.1	
30				2.0	
31				1.0	
32				0.5	

**Figure S1:** Histogram of the distribution of particle size  $\text{Bi}_2\text{S}_3$ 

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**Figure S2:** U-Vis spectrum of SDS 8.2mM.

**Figure S3:** DLS of Bi<sub>2</sub>S<sub>3</sub> SHS

**Figure S4:** SEM images of the  $\text{Bi}_2\text{S}_3$  thin films with (a) 30 (b) 50 layers.

