Supplementary Material

Assessing the role of plasma engineered *acceptor-like* intra- and inter-grain boundaries in heterogeneous WS_2-WO_3 films on photo-current characteristics

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Nanopowder of various functional semiconductors and oxides have recently been demonstrated in various possible applications including lubricants,[1-3] photocatalysis,[4-6] and photovoltaics.[7,8] The following table lists recently reported nanopowder compositions and their applications.

Nanopowders	Applications	Comments	Reference
MoS_2	Electrode in solar cells.	Comparable photovoltaic performance of solar cells has been reported using MoS_2 as an electrode to replace expensive platinum and other metals used in solar cells.	9, 10
$MoSe_2$	Electrode in solar cells. In energy storage devices and opto-electronics.	Decreased charge transfer resistance in dye sensitized solar cell and improved photovoltaic performance.	11, 12
WSe_2 composite	Electrode in solar cells.	Dye sensitized solar cells with conversion efficiency of 12.23% was reported.	13
WSe_2	sodium-ion batteries.	Showed high discharge capacity along with improved cycling stability due to the buffering effect	14

		of the carbon coated on WSe_2.	
WO_3	Pseudocapacitor.	Specific capacitance of 35.70 F/g was reported for Zn–WO_3 nanopowder.	15
WS_2-WO_3	Light-mater interaction, optoelectronics.	Effect of grain and grain-boundary distribution on photo-current characteristics of composite WS_2-WO_3 films reported.	Present work

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