Electronic Supplementary Material (ESI) for RSC Advances.

Optical and surface band bending mediated fluorescence sensing properties of MoS_2 quantum dots

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Supporting Information

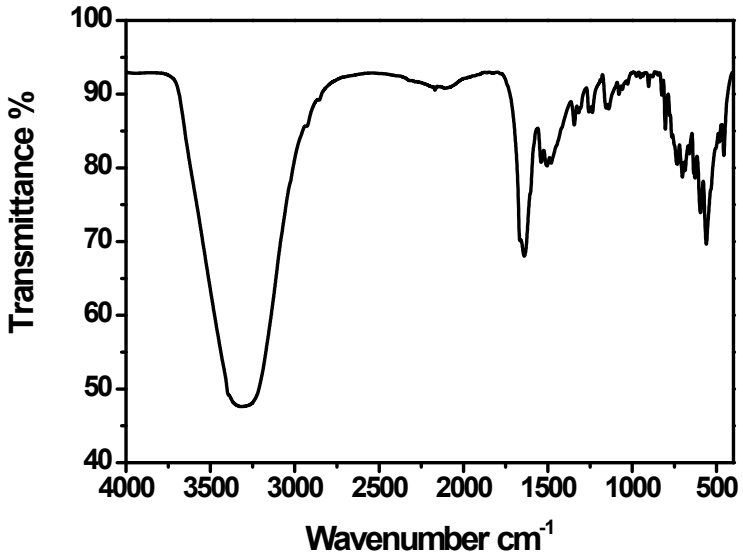

Figure S1: FTIR spectrum of prepared MoS_2 quantum dots.

Figure S1 depicts the FTIR spectrum of the prepared MoS_2 quantum dots. A characteristic peak found at 480 cm^{-1} is attributed to the Mo-S vibrations. The bands observed around 581, 1112 and 1397 cm^{-1} are assigned to the sulfate vibrations. The peaks around 1572

and 1637 cm^{-1} are assigned to the N-H in-plane stretching vibration and N-H bending vibrations respectively. The broad band around 3315 cm^{-1} is attributed to the N-H stretching vibrations.

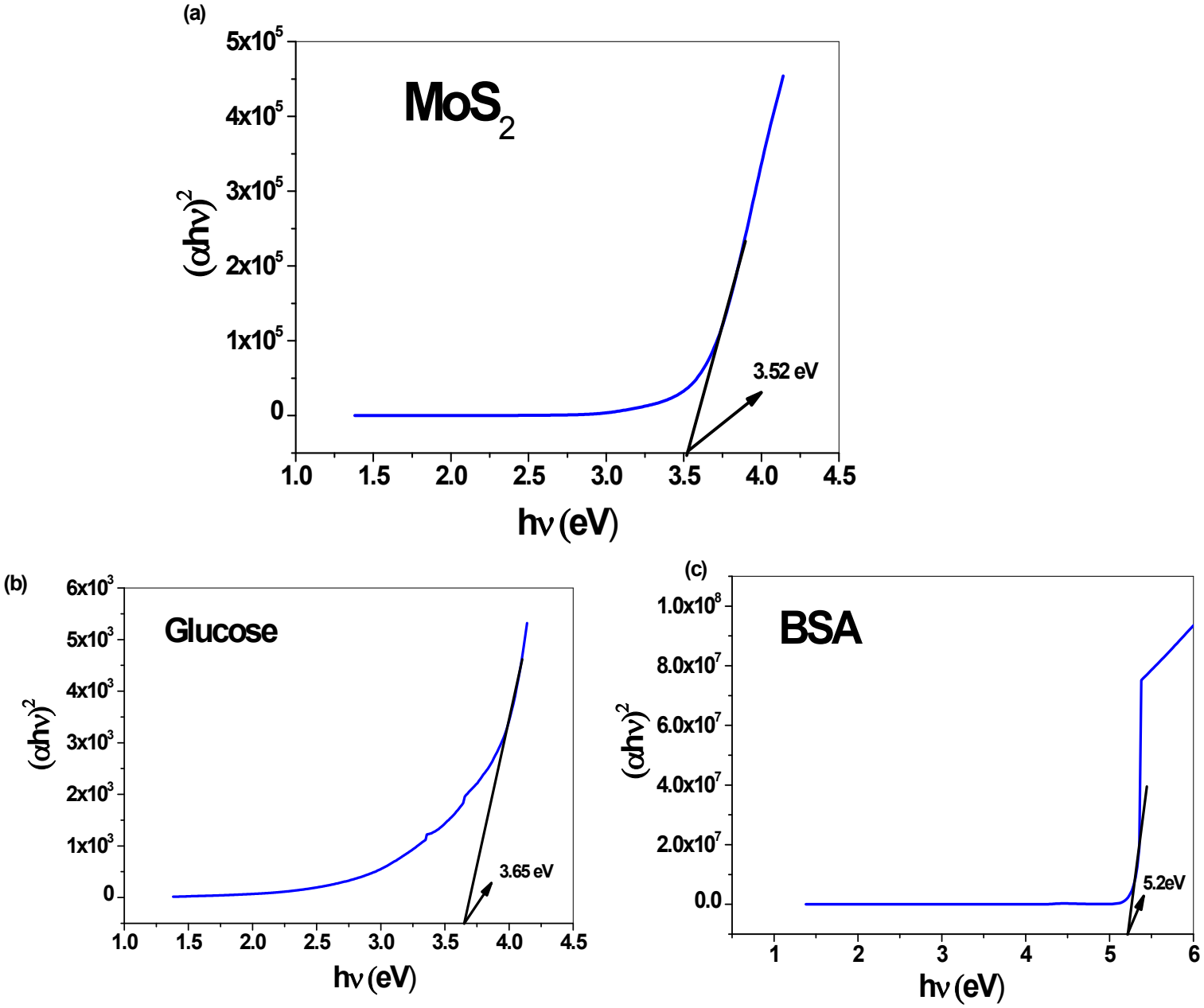

Figure S2: *$(\alpha h\nu)^2$ vs $h\nu$ plots of (a) MoS_2 (b) glucose and (c) BSA*

From the $(\alpha hv)^2 vs\ hv$ plots, the direct band gap of MoS_2 is found to be 3.52eV which is lesser than the HOMO-LUMO gap of glucose (3.65 eV) and BSA (5.2 eV). It supports that the electron transfer is possible only from glucose and BSA to MoS_2.