Supporting information

Tandem Synthesis of High Yield MoS_2 Nanosheets and Enzyme Peroxidase Mimicking Properties

Suresh Thangudu[1]*, Mu Tzu Lee[1] and Sami Rtimi[2]*

[1] Department of Chemistry, National Tsing Hua University, Hsinchu 30013, Taiwan;
[2] School of Basic Sciences (SB), Institute of Chemical Science and Engineering (ISIC), Group of Advanced Oxidation Processes (GPAO), École Polytechnique Fédérale de Lausanne (EPFL), Station 6, CH-1015 Lausanne, Switzerland.
* Author to whom correspondence should be addressed.
Correspondence: Rtimi.sami@gmail.com and suresh120689@gmail.com

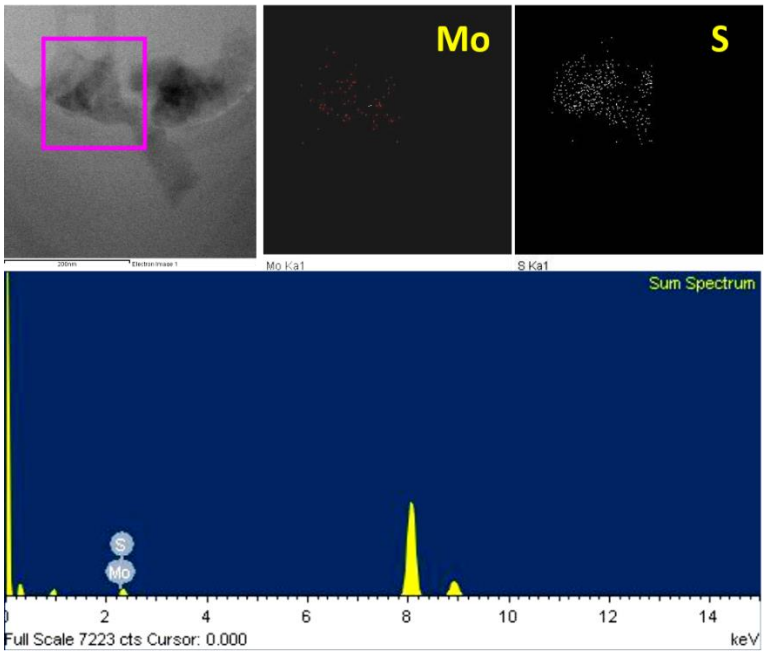

Figure S1. Energy dispersive spectroscopy (EDS) elemental analysis of B1-MoS_2 NSs.

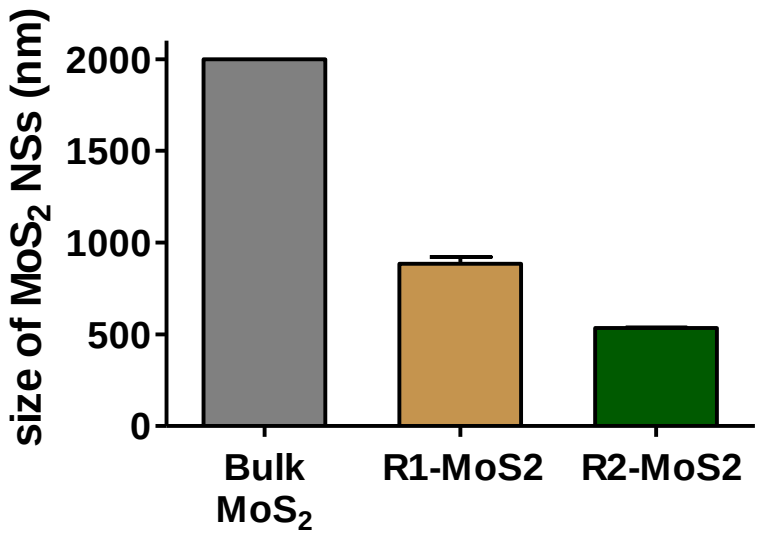

Figure S2. DLS size distribution analysis of bulk, R1 and R2-MoS_2.

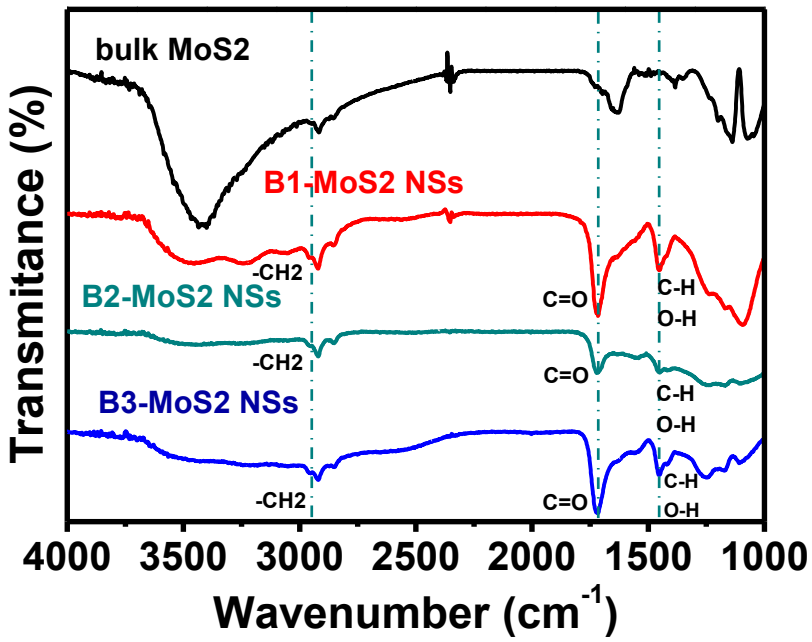

Figure S3. FTIR spectra of bulk MoS_2 and as synthesized B1, B2 and B3-MoS_2 NSs

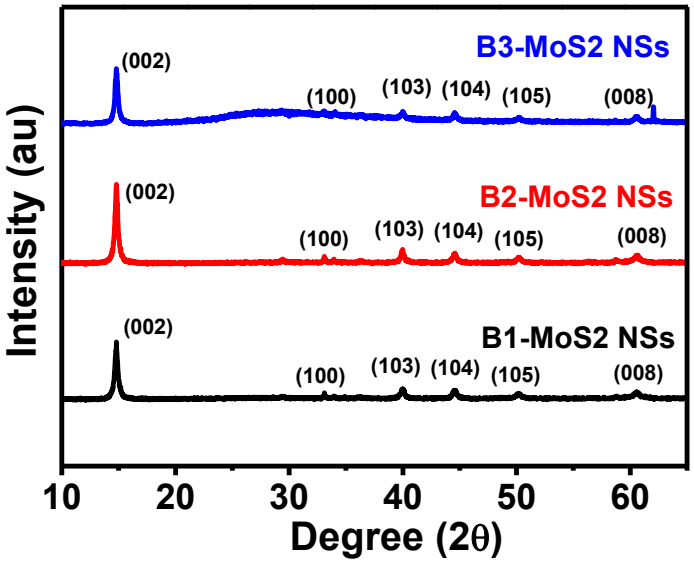

Figure S4. XRD spectra of as synthesized B1, B2 and B3-MoS_2 NSs

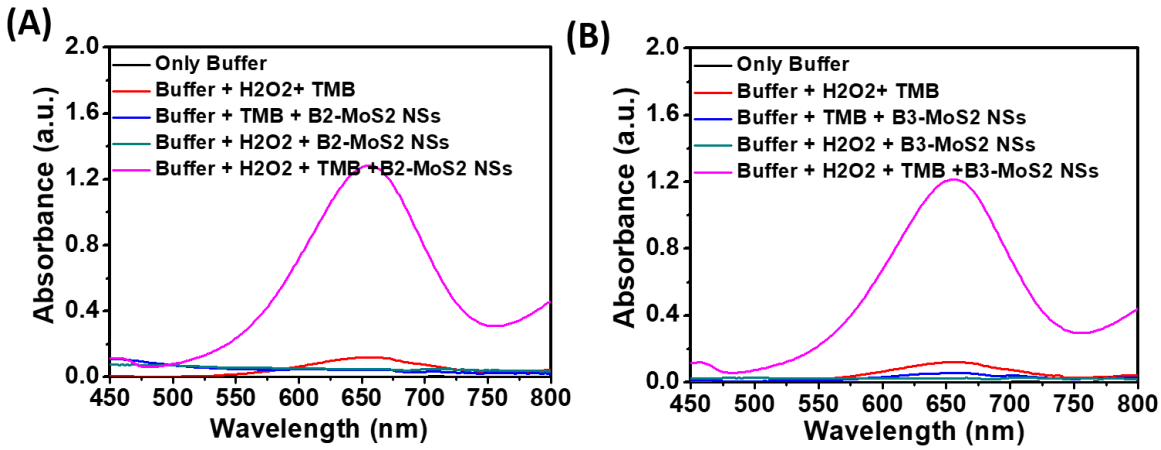

Figure S5. TMB oxidation assay for evaluating the peroxidase activity of B2 and B3-MoS_2 NSs at identical conditions (i.e. same concentration of NSs, 100 µL of MoS_2 NSs (~500 µg mL^{-1})).

Table S1. Literature summary of methods for synthesizing the water soluble MoS2 nanosheets via sonication assisted methods by using bulk MoS_2.

Reaction conditions	**Sonication method and reaction time (h)**	**Remarks**	**Ref.**
Bulk MoS_2, liquid nitrogen, Isopropanol (IPA), sodium borohydride (NaBH4)	ultrasonication at a power of 180 W for 5 h	Toxic solvents, complex process	S1
Bulk MoS_2, BSA	ultra-sonication for 48 h	Longer times	S2
Bulk MoS_2, house-hold detergent	solid probe sonicator, 3 h	Pretreatment at 40–50 °C, stability of NSs with detergent unknown	S3
Bulk MoS_2, ethanol/water	sonication for 8 h	Organic solvents	S4
Bulk MoS_2, N-methyl 2-pyrrolidone (NMP)	probe sonicator, for 2h	Toxic solvents	S5
Bulk MoS_2, polyacrylic acid	Probe sonication, tandem process	Green solvent water	**Present work**

Supporting references

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S5. Vignesh; Kaushik, S.; K.Tiwari, U.; Kant Choubey, R.; Singh, K.; Sinha, R.K. Study of Sonication Assisted Synthesis of Molybdenum Disulfide (MoS2) Nanosheets. Materials Today: Proceedings 2020, 21, 1969-1975.