Supporting Information for

Few-layered MoSe₂ nanosheets as efficient peroxidase nanozyme for high-

sensitive colorimetric detection of H_2O_2 and xanthine

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Figure S1. (A) AFM topographic image and (B) corresponding height of MoSe₂ nanosheets. (C) TEM image and (D) corresponding statistics analysis of diameter of MoSe₂ nanosheets.



Figure S2. (A) Time-dependent absorbance of ABTS at 405nm and (B) OPD at 450nm in different reaction systems.



Figure S3. (A) pH dependent peroxidase-like activity of MoSe₂ nanosheets in MES buffer and (B) phosphate-citrate buffer with TMB as substrate and the maximum point was set as 100%. (C) The comparison of catalytic activities of MoSe₂ nanosheets in different buffers and (D) size of MoSe₂ nanosheets.



Figure S4. Selectivity analysis for xanthine detection by using 1mM ascorbic acid, glucose, uric acid and xanthine.

Material	Analysts	Linear range (µM)	LOD (µM)	References
Se-g-C ₃ N ₄	H_2O_2	16-4000	1.6	21
CuNCs		0.50-100	0.24	37
Ir NPs		1-100	0.53	38
MoSe ₂ nanosheets		10-160	0.408	This work
Se-g-C ₃ N ₄	Xanthine	0.16-40	0.016	21
CuNCs		0.50-100	0.38	37
Ir NPs		10-150	5.2	38
MoSe ₂ nanosheets		10-320	1.964	This work

Table S1. Comparison of different nanomaterials for detection of H_2O_2 and xanthine