

## Smart Self-assembly of Multifunctional Theranostic Nanozyme for Self-enhanced Precise Chemo/Chemodynamic Therapy

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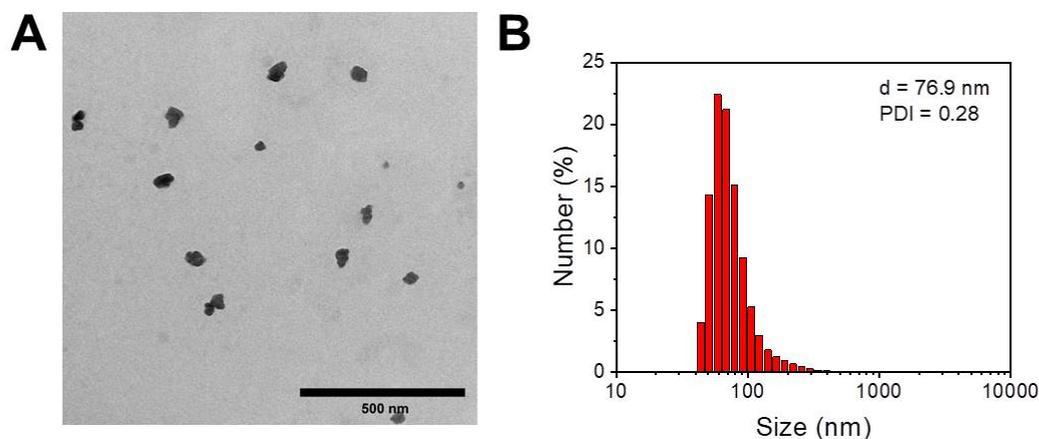
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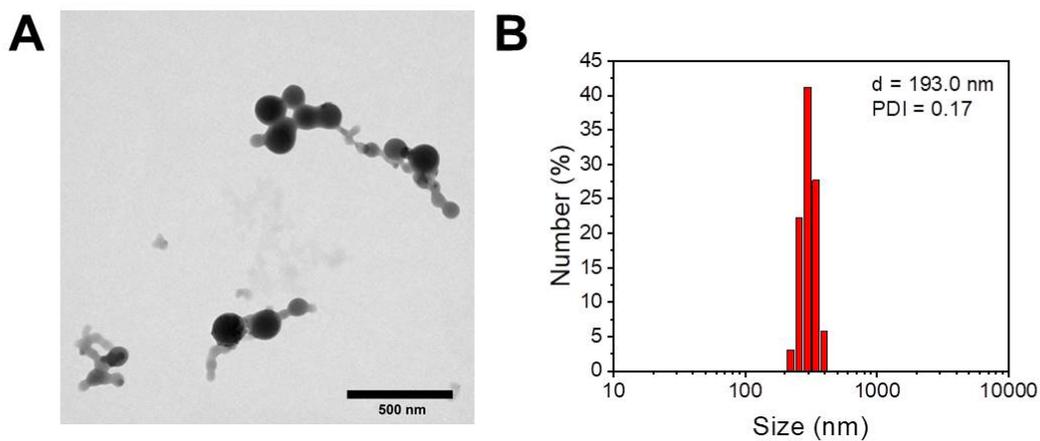
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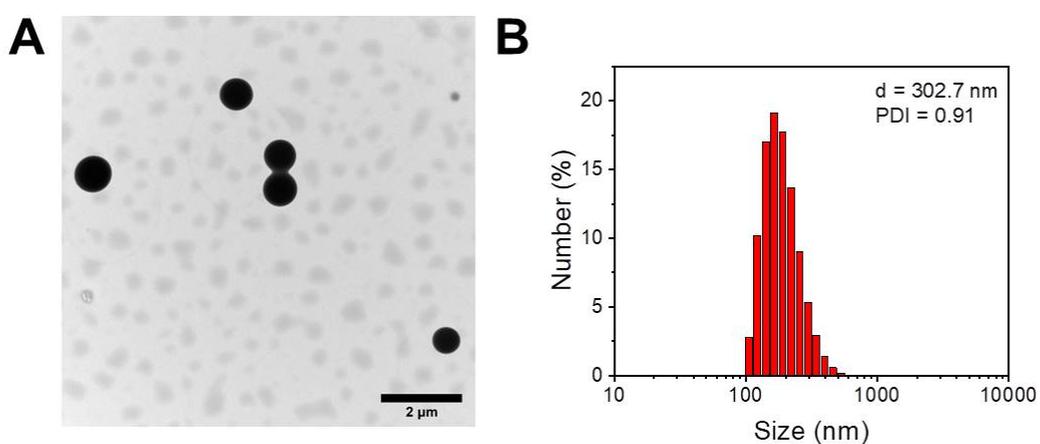
† These authors have contributed equally to this work.



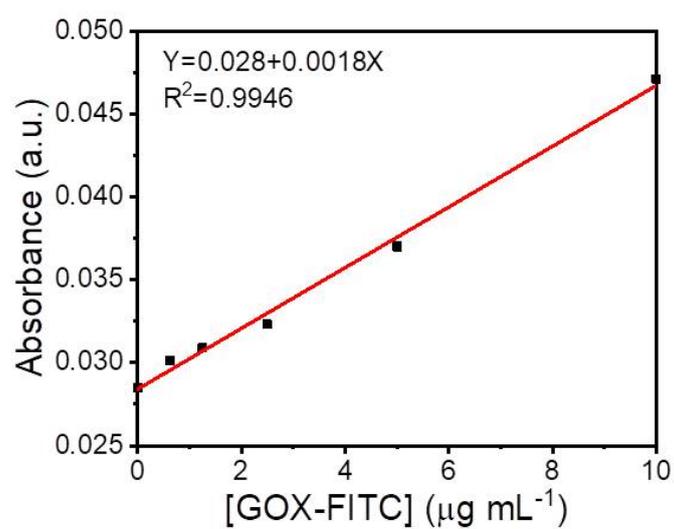
**Figure S1.** TEM image and particle size distribution of Leu/Mn nanoparticles.



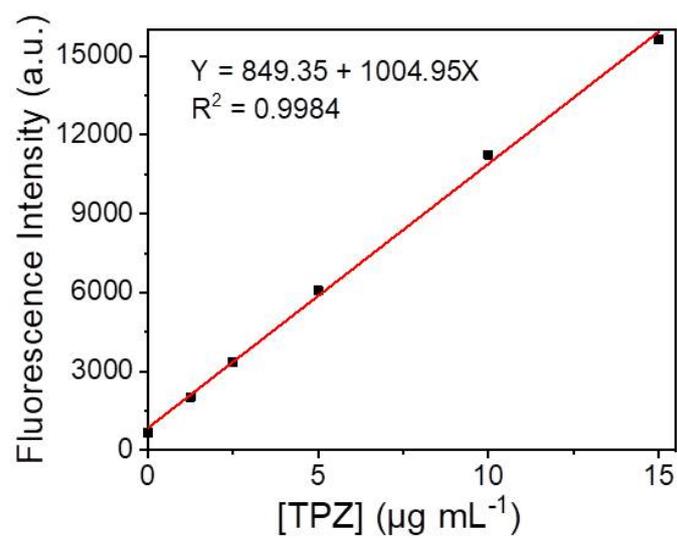
**Figure S2.** TEM image and particle size distribution of His/Mn nanoparticles.



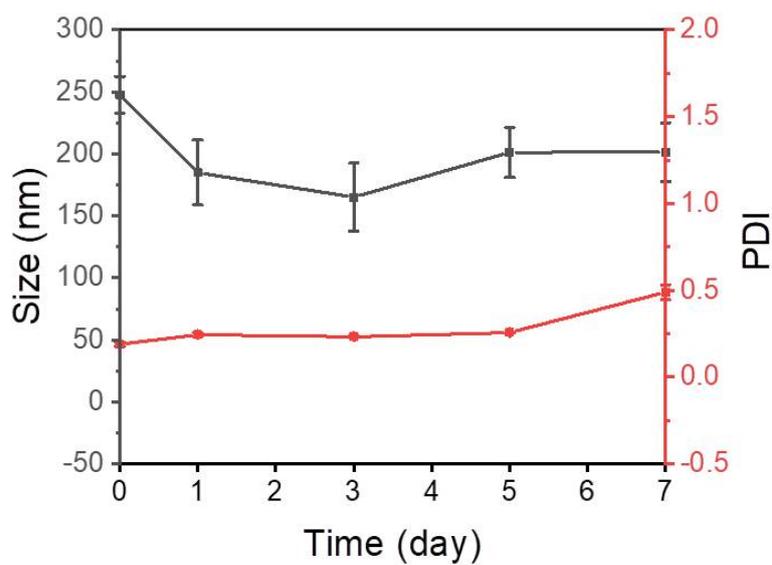
**Figure S3.** TEM image and particle size distribution of Glu/Mn nanoparticles.



**Figure S4.** Standard curve of GOX-FITC according to the absorbance of FITC at 486 nm.



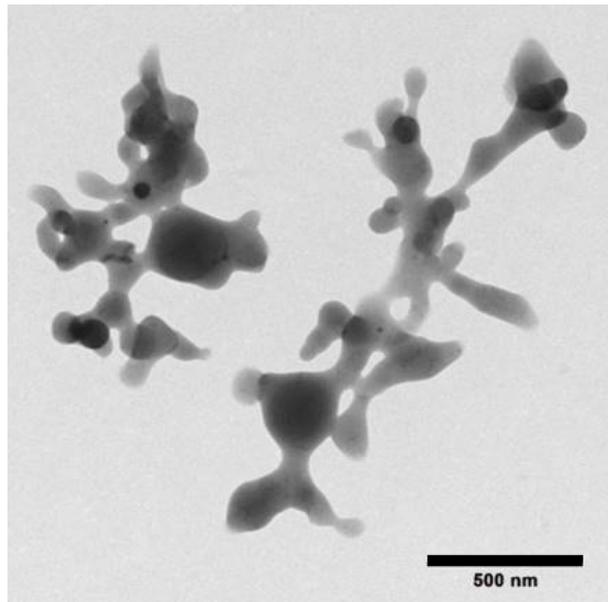
**Figure S5.** Standard curve of TPZ according to the fluorescence intensity of TPZ (ex: 475 nm, em: 575 nm)



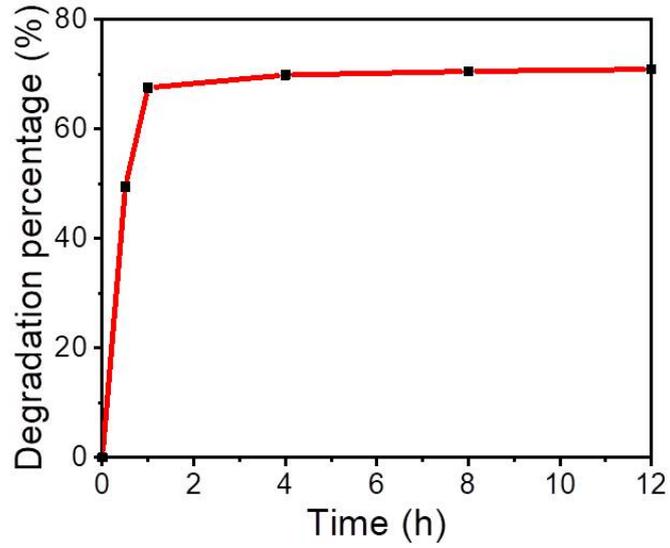
**Figure S6.** Changes in hydrodynamic diameter and PDI of Cys/Mn@GOX/TPZ in RPMI 1640 medium with 10% FBS over a period of 7 d at 37 °C .



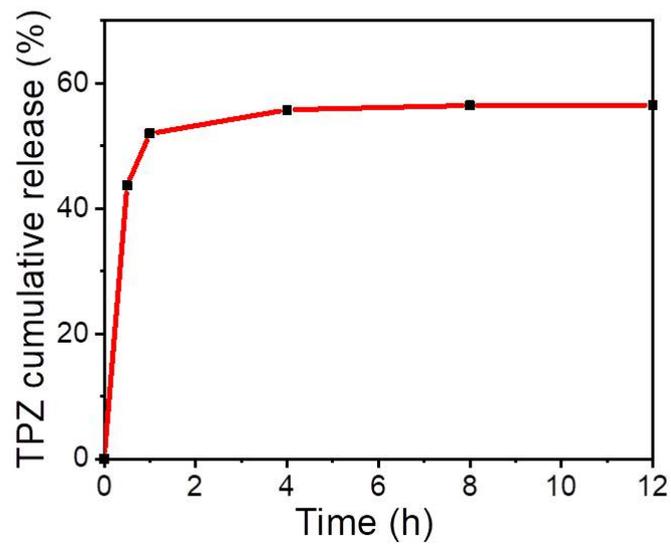
**Figure S7.** Images of Cys/Mn@GOX/TPZ before and after treatment with GSH (5 mM) in PBS at 37 °C over a period of 12 h.



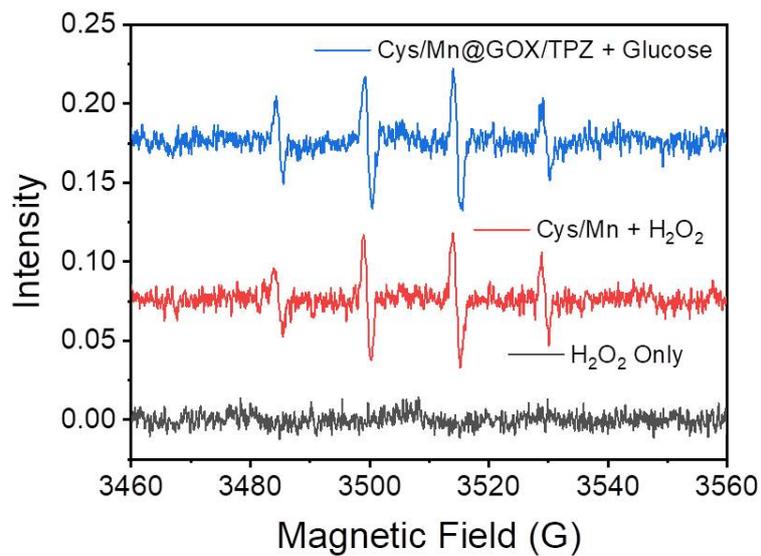
**Figure S8.** TEM image of Cys/Mn@GOX/TPZ after treatment with GSH (5 mM) in PBS at 37 °C over a period of 12 h.



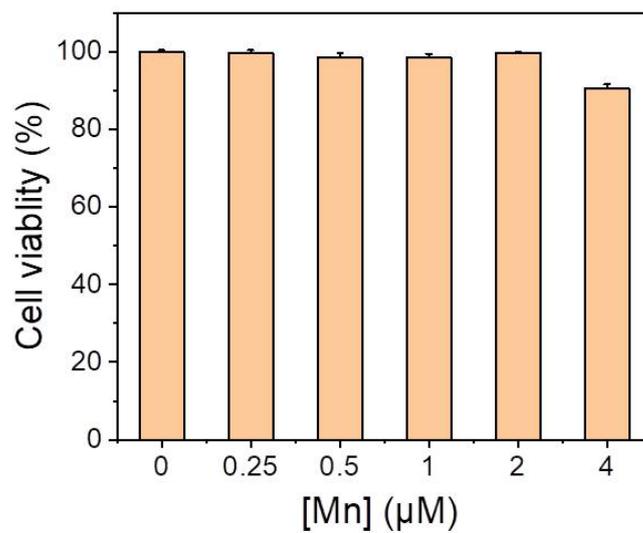
**Figure S9.** Quantification of the degradation percentage of Mn with in Cys/Mn@GOX/TPZ after treatment with GSH (1 mM) for 12 h.



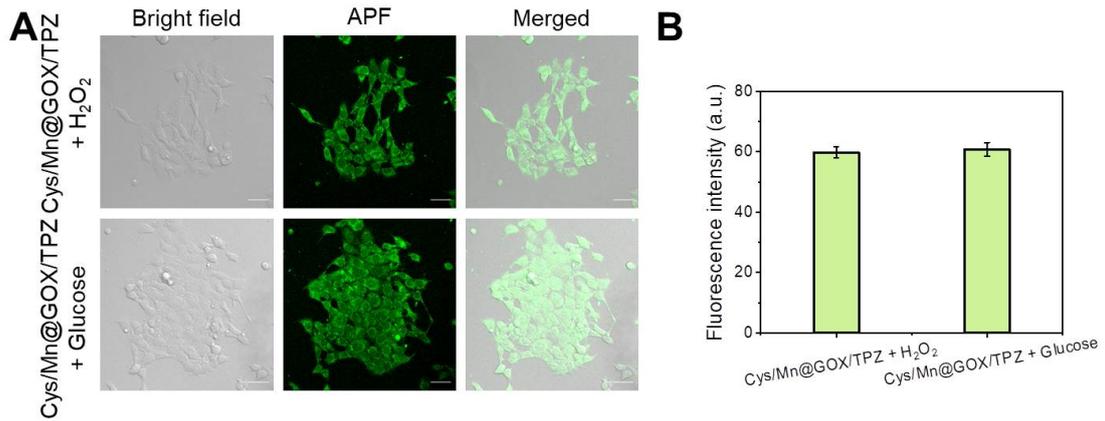
**Figure S10.** TPZ release profile of Cys/Mn@GOX/TPZ after treatment with GSH (1 mM) for 12 h.



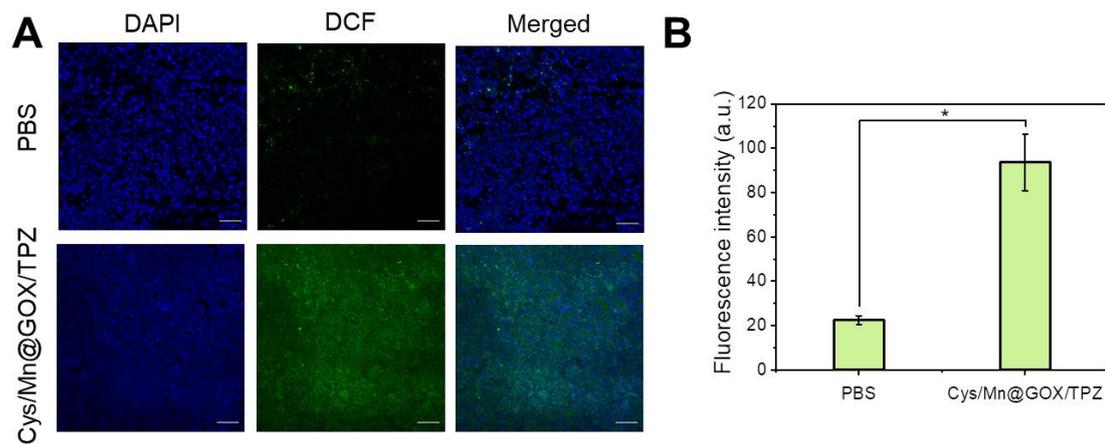
**Figure S11.** ESR spectra demonstrating the •OH generation of Cys/Mn@GOX/TPZ + Glucose, Cys/Mn + H<sub>2</sub>O<sub>2</sub>, and H<sub>2</sub>O<sub>2</sub> only.



**Figure S12.** Cytotoxicity of Cys/Mn@GOX/TPZ ([Mn<sup>2+</sup>] = 0, 0.25, 0.5, 1, 2, 4 μM) on L929 normal cells in normoxic conditions.



**Figure S13.** (A) Cellular  $\bullet$ OH generation of Cys/Mn@GOX/TPZ in different conditions detected by APF. Scale bar: 50  $\mu$ m. (B) The corresponding quantified intracellular fluorescence intensities of APF.



**Figure S14.** (A) Examination of the ROS levels in 4T1 tumor tissue using DCFH-DA as an indicator. Scale bar: 50  $\mu$ m. (B) The corresponding quantified intracellular fluorescence intensities of DCF.