Supplementary Information

**Fabrication of hydrophilic luminescent zinc oxide quantum dots for selective detection of copper ions and efficient inhibition of harmful fungi**

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Fig. S1 (A) simplified reaction of hydrolysis and condensation of APTES with production of silane polymer; (B) scheme of the simplified amination reaction on the ZnO QDs surface.



Fig. S2 The HRTEM and lattice fringe image of the as-prepared M-ZnO QDs.



Fig. S3 TEM images of the synthesized M-ZnO QDs (A) without the addition of Cu2+ and with the addition of 80 μM Cu2+.

Fig. S4 (A) The fluorescence lifetime curves and (B) UV-Vis absorption spectra of M-ZnO QDs with/without the addition of 80 μM Cu2+, respectively.