1 Supplementary Information

2 A Microfluidic Detection System for Quantitation of Copper Incorporating a Wavelength-Ratiometric

3 Fluorescent Quantum Dot Pair

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8 Characterization of CdTe quantum dots and CdTe/CdS core/shell quantum dots

9 Water-soluble CdTe quantum dots and CdTe/CdS core/shell quantum dots were synthesized in

10 aqueous solution with mercaptopropionic acid as a capping agent. Green CdTe QDs were obtained by

11 refluxing the mixture for 4 hrs. Red CdTe/CdS core/shell QDs were achieved by cladding CdTe core with

12 CdS QD for 2 hr. The absorption and emission spectra of the two color QD pair is shown in Fig. S1.



Figure S1 a) Absorption spectra of QD530 (green) and QD650 (red) b) Fluorescence emission spectra of
QD530 and QD650. Inset image shows the solutions of QD530 and QD650, respectively, under UV light
(365nm).

The absorption spectra of the quantum dots showed a first excitonic absorption peak which
corresponded to the particle diameters, extinction coefficients and molar concentrations of the QDs.

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- 19 The diameters of the as-prepared QD530 and QD650 were 1.44 and 3.75 nm, respectively (calculated
- 20 values).¹ The molar concentrations of QD530 and QD650 were 253 µM and 4.96 µM, respectively.
- 21 Quantum yields of the QDs were determined by comparison to Rhodamine B, which has a quantum yield
- 22 of 0.31 (in water).² Quantum yields for QD530 and QD650 were 0.039 and 0.169, respectively. The
- 23 core/shell structure of the red QD helped to improve the quantum yield of the product.



25 Figure S2. Effect of reaction time on sensitivity and linearity of the calibration curve (n=5, sample size =

26 30 μL).







- 29 copper-fortified serum sample (n=20, sample size= 20 µL).
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31 Notes and references

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