

Supplementary

Sensitivity to heavy-metal ions of unfolded fullerene quantum dots

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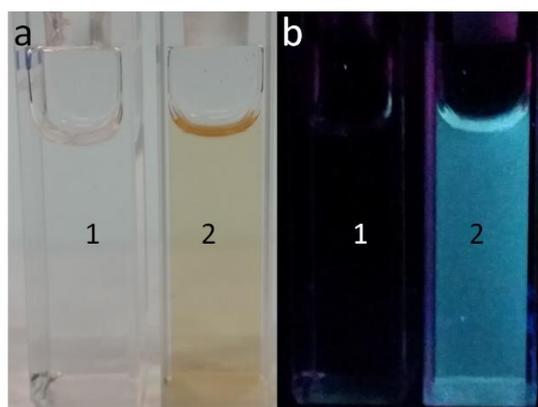


Figure S1. Photograph of DI water (1) and UFQDs solution (2), taken under visible light (a) and 365-nm UV light (b).

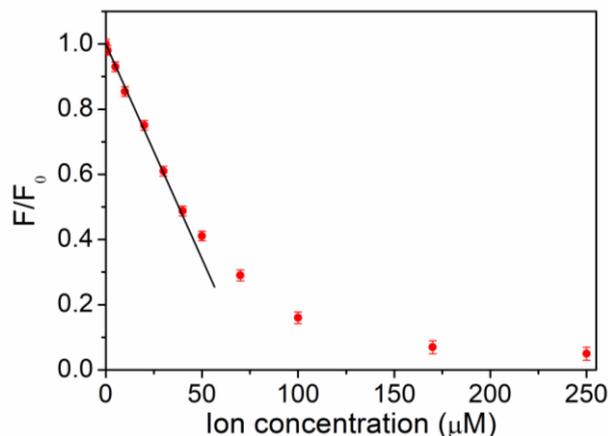


Figure S2. Fluorescence intensity ratio F/F_0 of UFQDs as a function of Cu^{2+} concentration in the range 0 – 250 μM

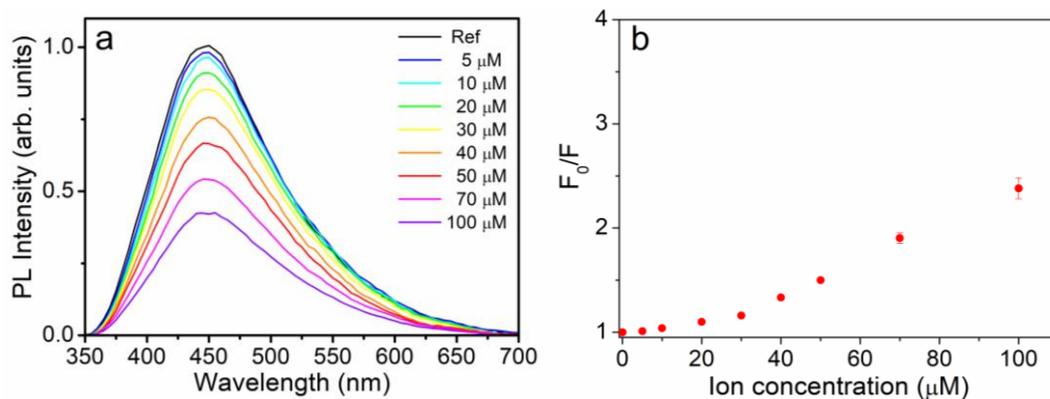


Figure S3. (a) Emission spectra of UFQDs in the absence (Ref) and presence of Pb^{2+} at different concentrations; (b) Stern-Volmer plot describes the dependency of the quenching effect on the Pb^{2+} concentration in the range 0-100 μM .

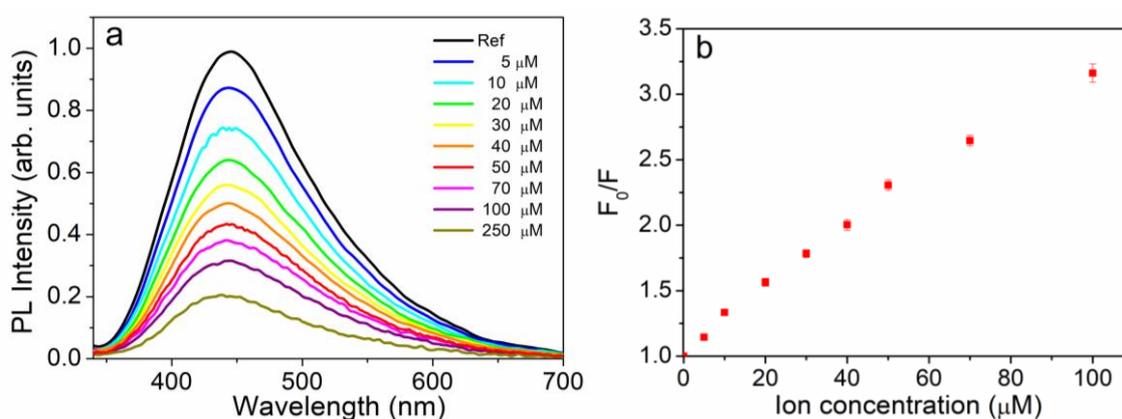


Figure S4. (a) Emission spectra of UFQDs in the absence (Ref) and presence of As(III) at different concentrations; (b) Stern-Volmer plot describes the dependency of the quenching effect on the As(III) concentration in the range 0-100 μM .

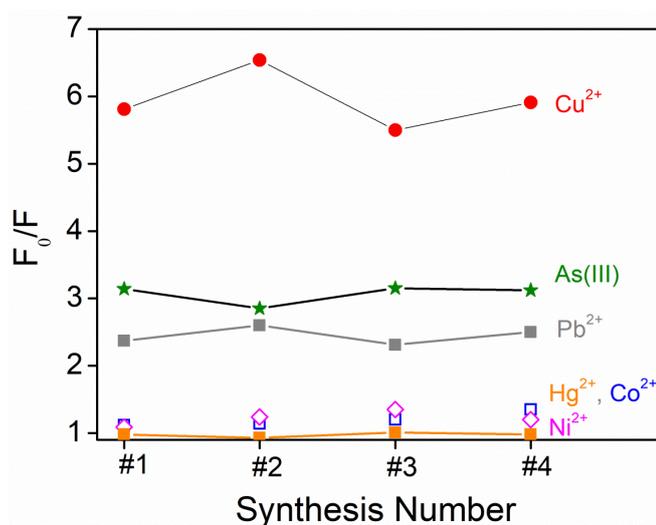


Figure S5. The reproducibility of the quenching ratio in the presence of some relevant metal ions measured with UFQDs reference solutions prepared on different days.

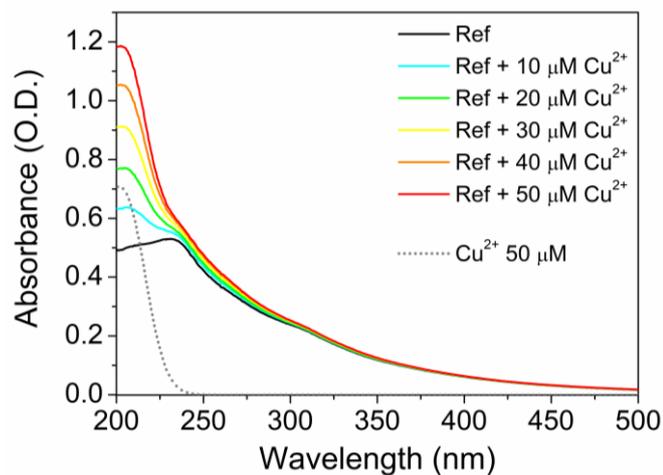


Figure S6. The UV-vis spectra of the UFQD reference solution in the presence of Cu^{2+} at different concentrations. It is also shown, for comparison, the absorption spectrum of the aqueous solution of the bare ion at $50 \mu\text{M}$ without UFQDs (dotted grey line).

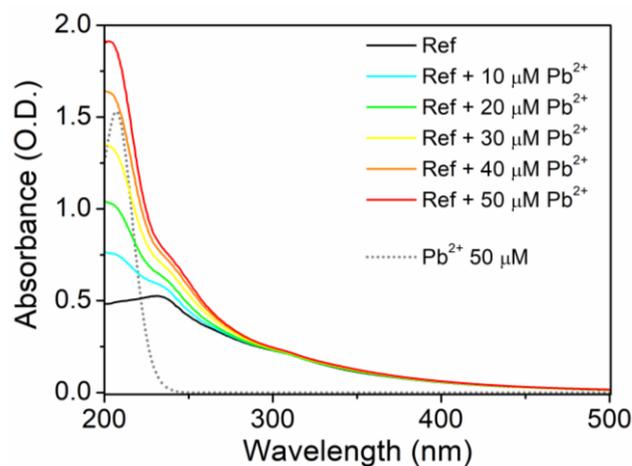


Figure S7. The UV-vis spectra of the UFQD reference solution in the presence of Pb^{2+} at different concentrations. It is also shown, for comparison, the absorption spectrum of the aqueous solution of the bare ion at $50 \mu\text{M}$ without UFQDs (dotted grey line).

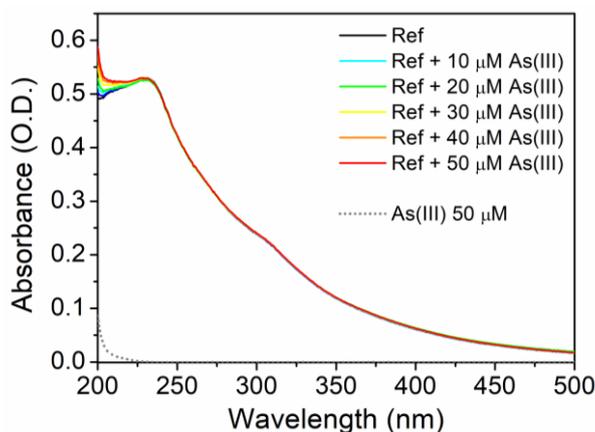


Figure S8. The UV-vis spectra of the UFQD reference solution in the presence of As(III) at different concentrations. It is also shown, for comparison, the absorption spectrum of the aqueous solution of the bare ion at $50 \mu\text{M}$ without UFQDs (dotted grey line).

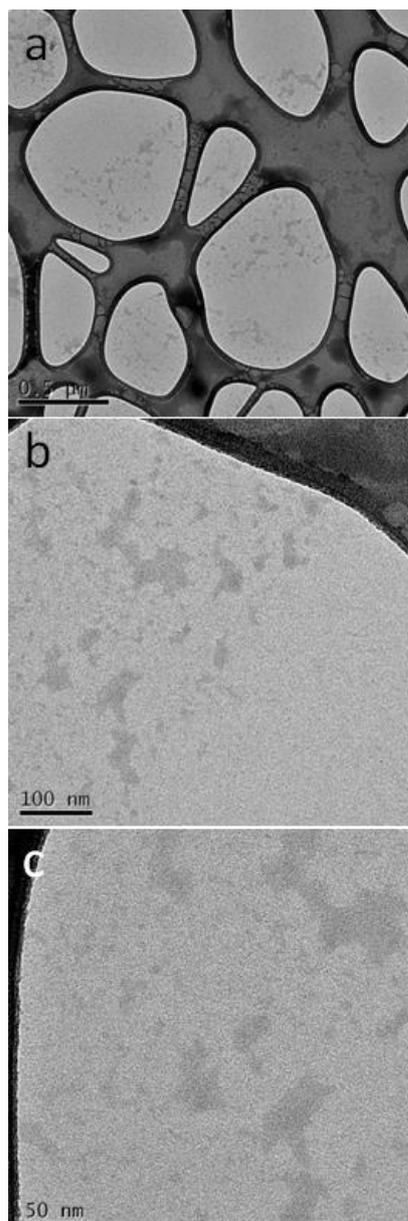


Figure S9. (a) Low-magnification, (b) medium-magnification and (c) high-magnification TEM images of UFQDs after the addition of Cu^{2+} ions a concentration of $100 \mu\text{M}$.

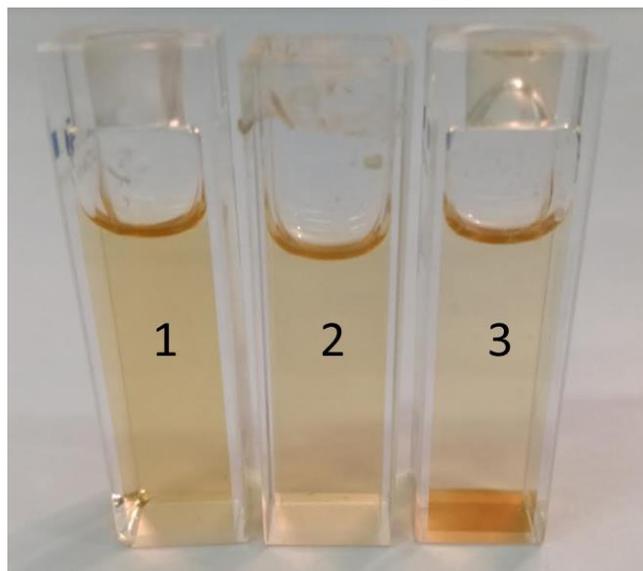


Figure S10. Photograph of the UFQDs solution taken 6 h after the addition of 100 μM Cu^{2+} (1), As(III) (2) and Pb^{2+} (3).

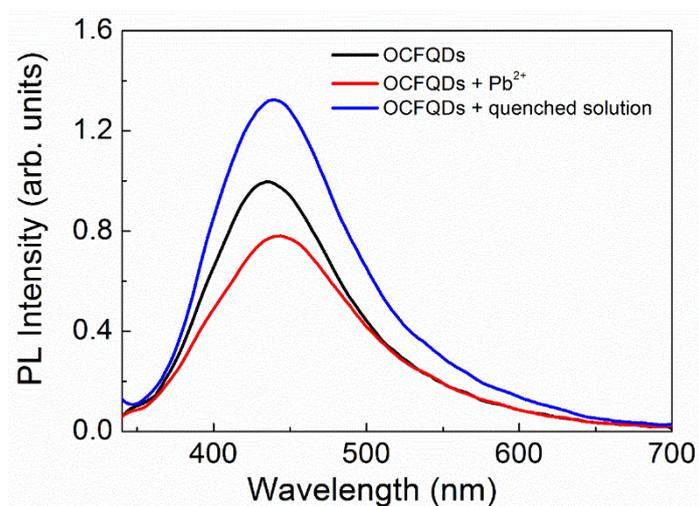


Figure S11. Emission spectra of the UFQDs reference solution in the absence (black line), in the presence (red line) of 100 μM Pb^{2+} and in the presence of the Pb^{2+} - quenched solution (blue line).

When the quenched solution was added, the emission intensity of the OCFQDs reference solution (blue line) increased above the reference value (black line), instead of being quenched, since new UFQDs were added in place of the Pb^{2+} ions.