Supporting Information for

Multispectral Upconversion Luminescence Intensity Ratio for Ascertaining Tissue Imaging Depth

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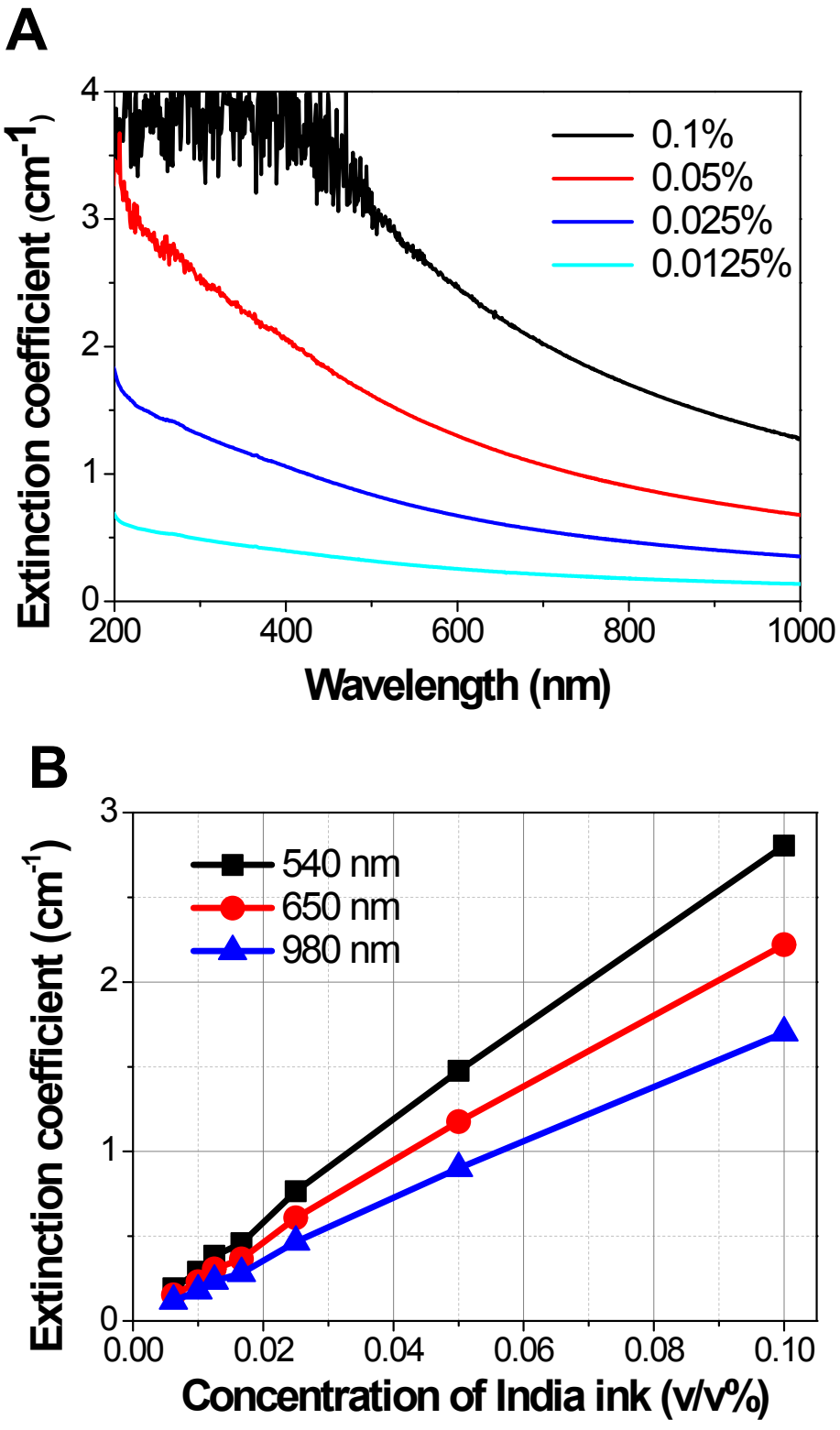

Figure S1. Absorption spectra of India Ink added into water with different concentrations (A), and the corresponding absorption coefficient at different wavelengths (B).

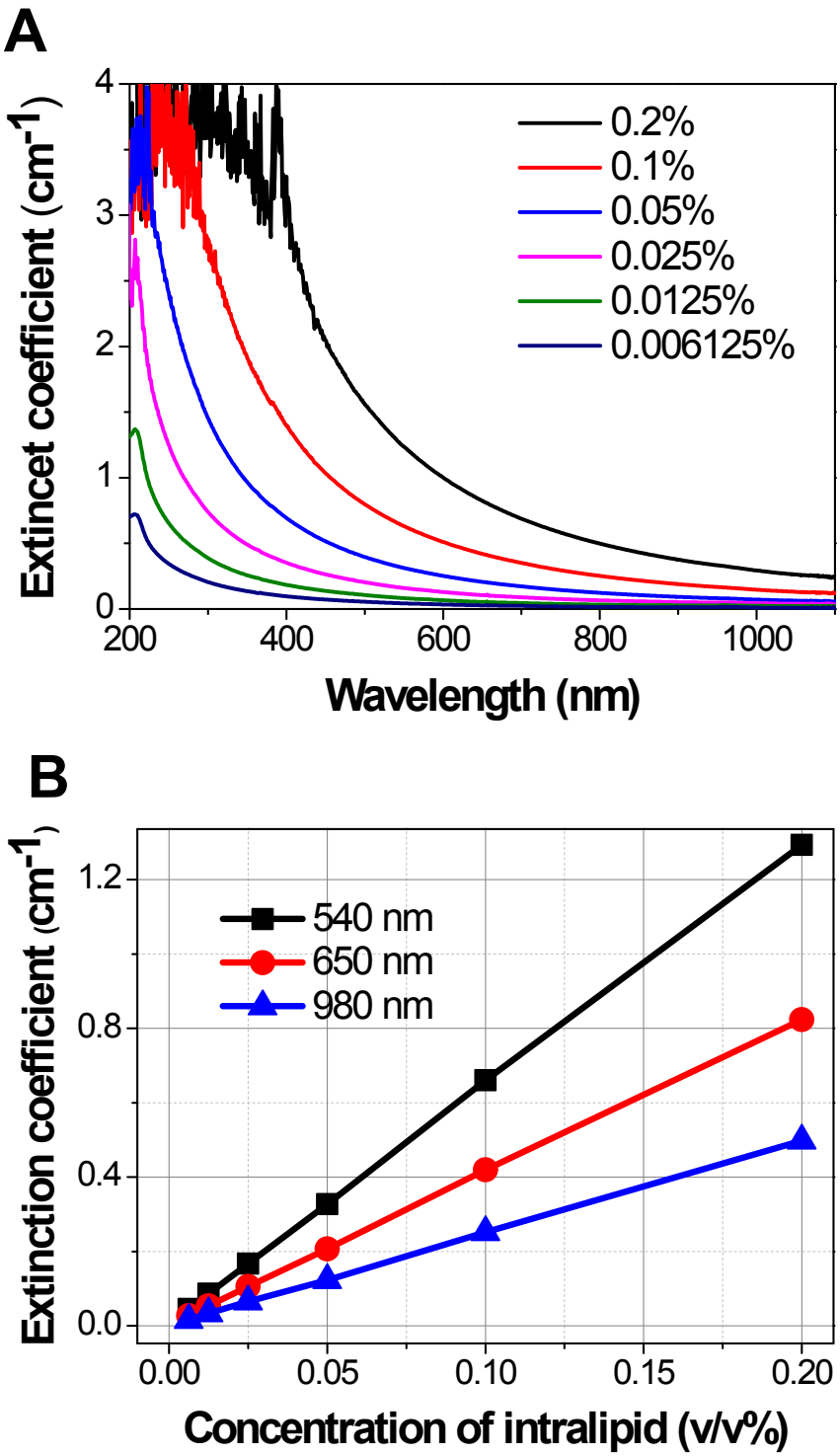

Figure S2. Extinction spectra of Intralipid added into water with different concentrations (A), and the corresponding extinction coefficient at different wavelengths (B).

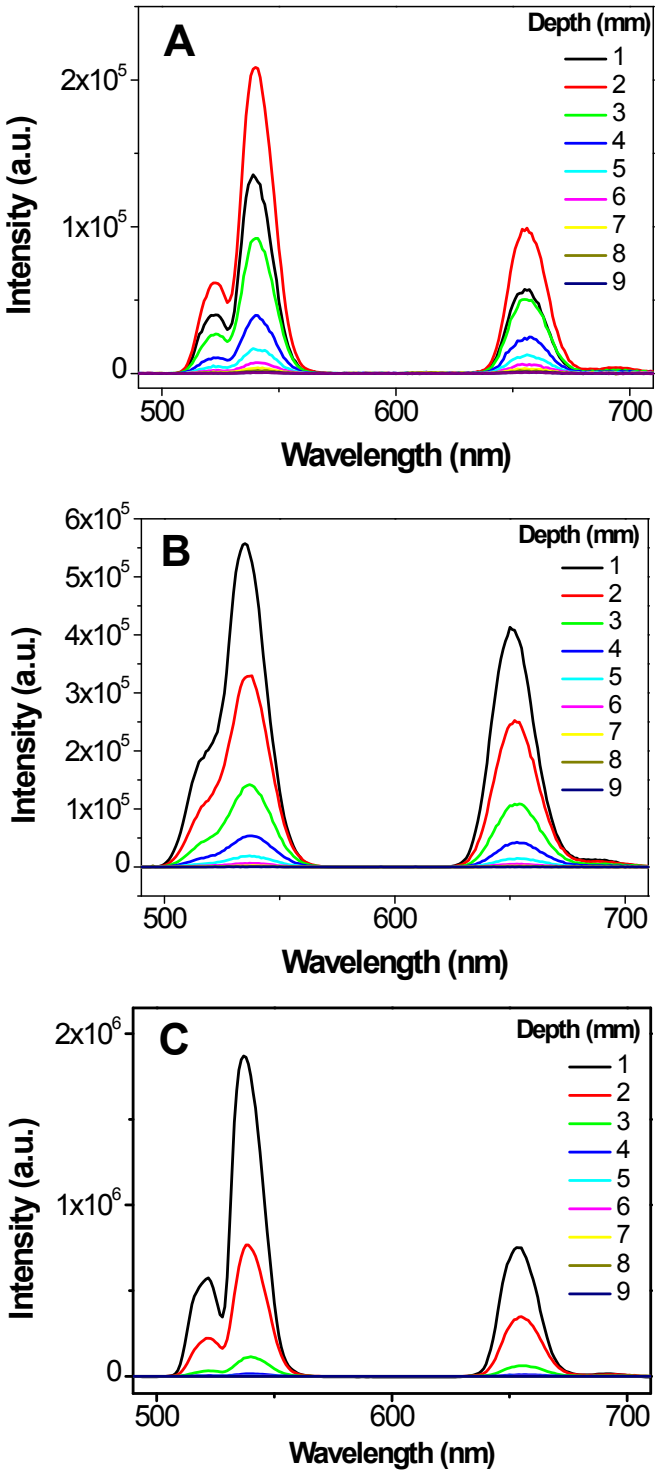

Figure S3. Upconversion luminescence spectra detected from Em mode (A), Ref mode (B) and Ref mode (C) by embedding UCNPs at different depth in liquid phantom consist of 0.025% India ink and 0.5% intralipid with same 980 nm NIR excitation power of 600 mW/cm^2.

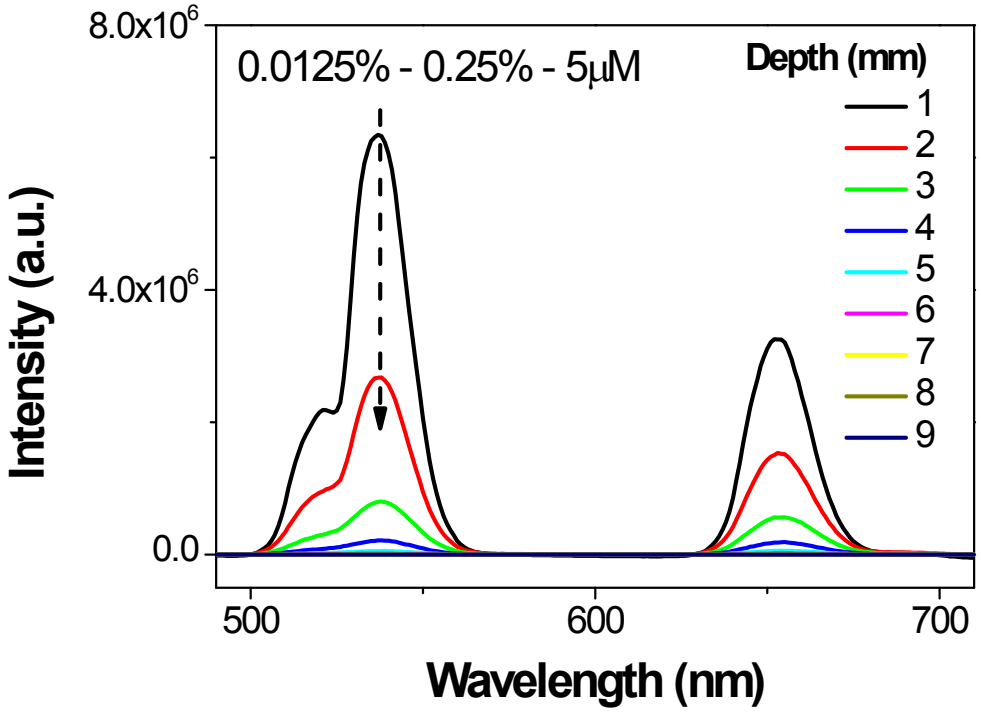

Figure S4. Upconversion luminescence spectra detected from Ref mode by embedding UCNPs at different depths in liquid phantom (India ink 0.0125% + intralipid 0.25% + rose Bengal 5 μM) with 980 nm NIR excitation of 700 mW/cm^2.

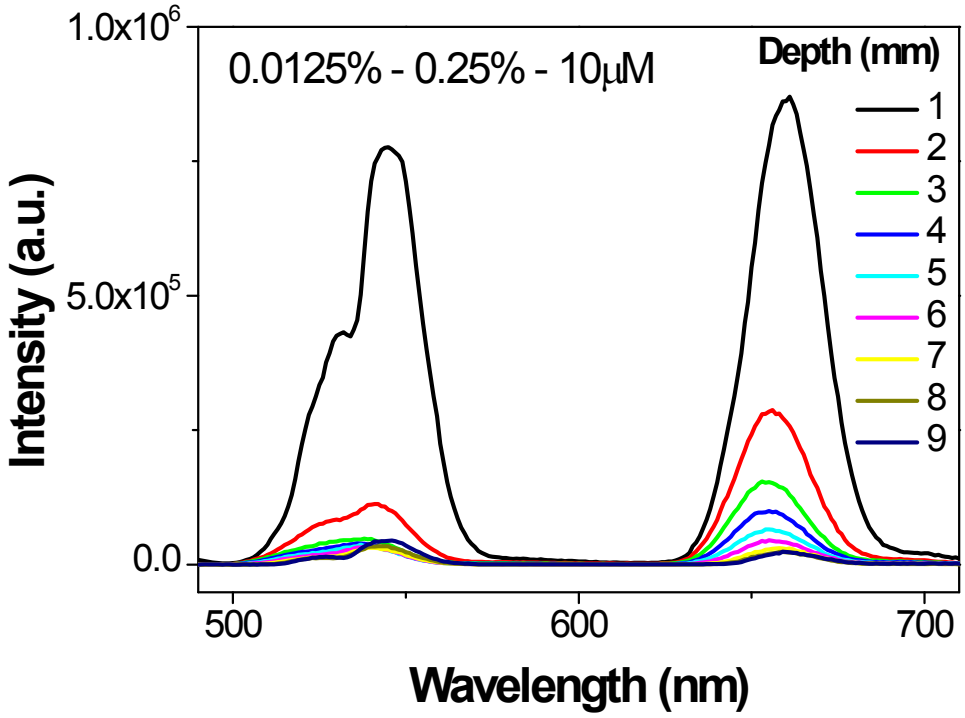

Figure S5. Upconversion luminescence spectra detected from Ref mode by embedding UCNPs at different depths in liquid phantom (India ink 0.0125% + intralipid 0.25% + rose Bengal 10 μM) with 980 nm NIR excitation of 700 mW/cm^2.

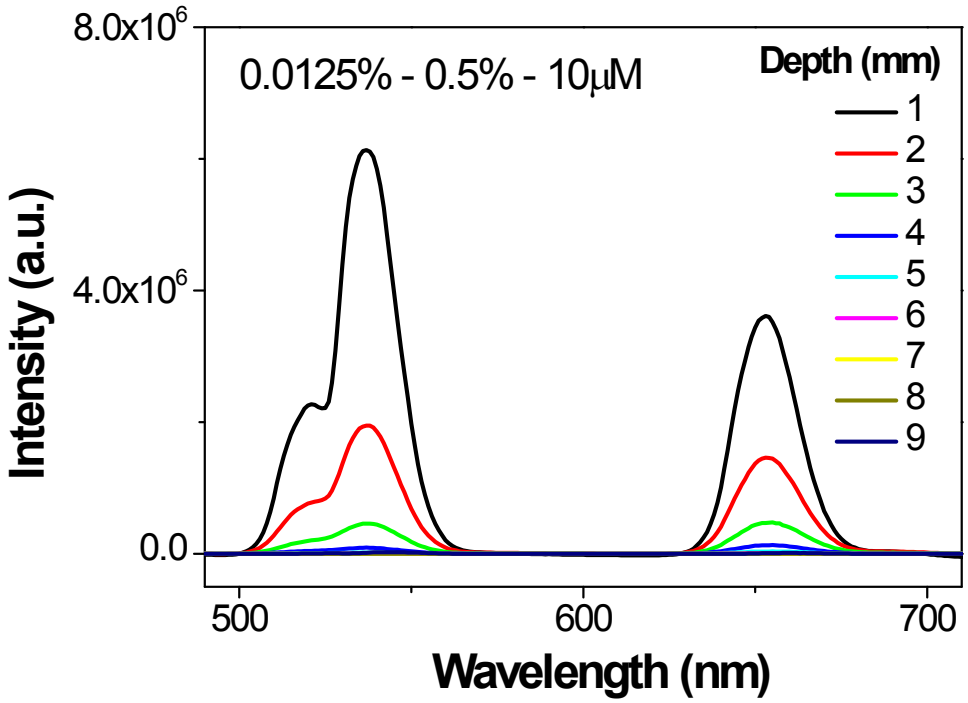

Figure S6. Upconversion luminescence spectra detected from Ref mode by embedding UCNPs at different depths in liquid phantom (India ink 0.0125% + intralipid 0.5% + rose Bengal 10 μM) with 980 nm NIR excitation of 700 mW/cm^2.

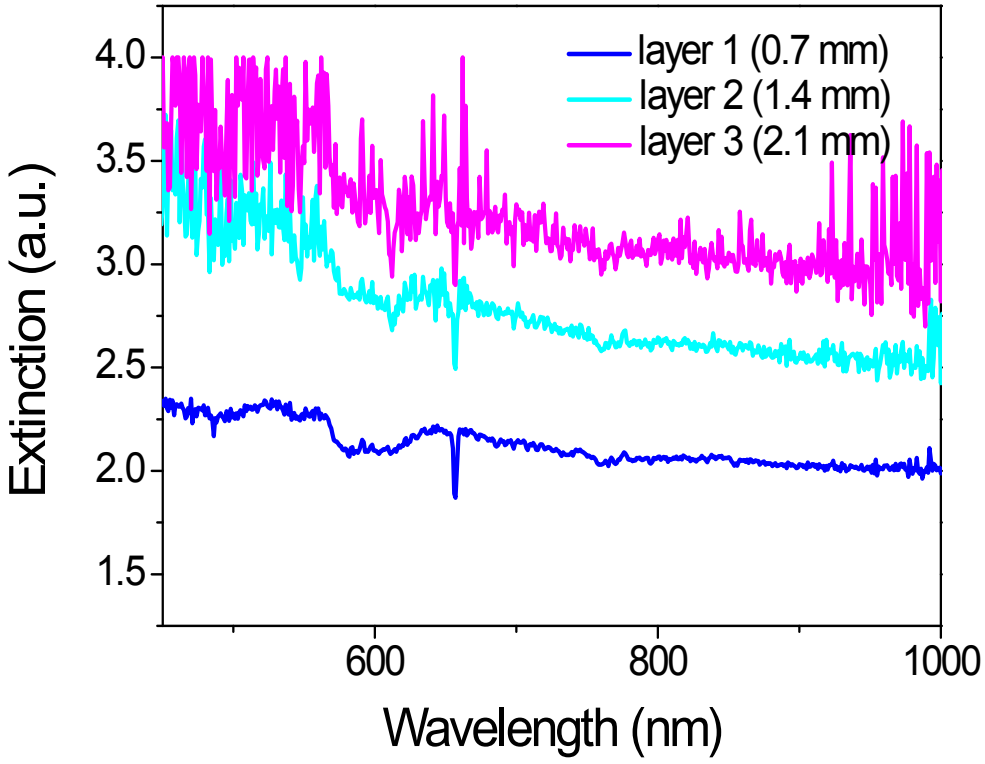

Figure S7. Extinction spectra of pork muscle tissues of different depths from 0.7 to 2.1 mm.

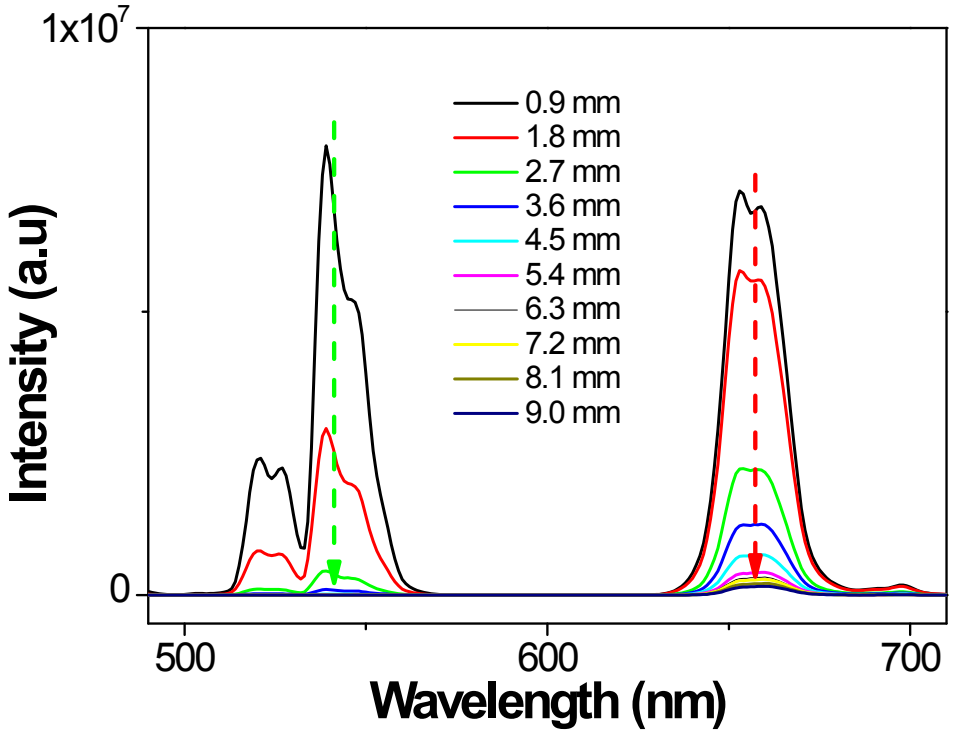

Figure S8. Upconversion luminescence spectra detected from Em mode by embedding UCNPs at different depths in pork muscle tissue with 980 nm NIR excitation of 700 mW/cm^2.

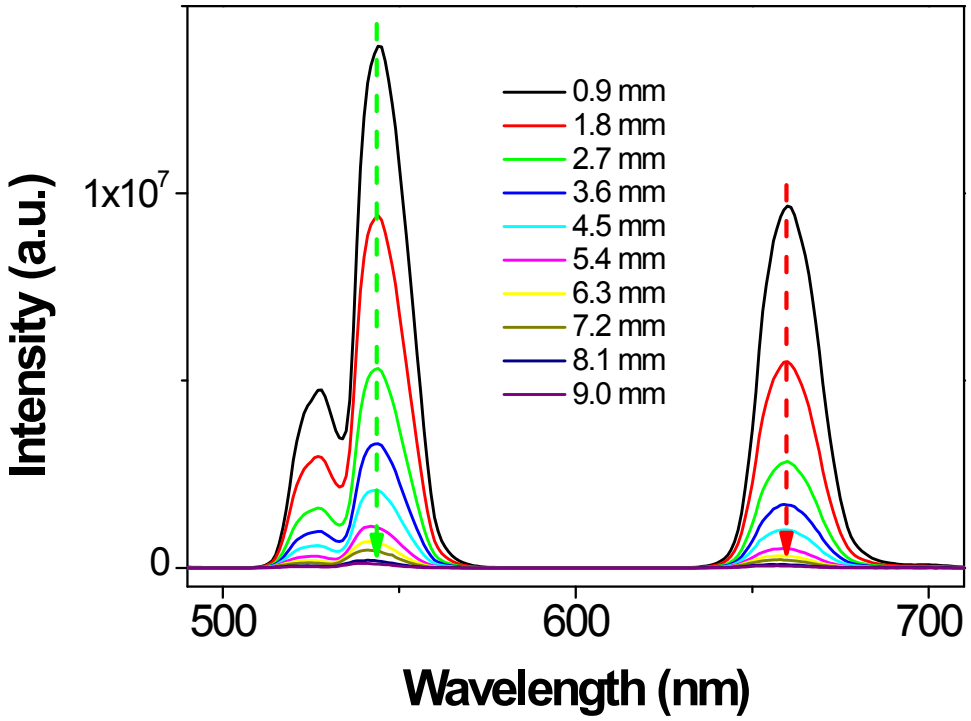

Figure S9. Upconversion luminescence spectra detected from Ex mode by embedding UCNPs at different depths in pork muscle tissue with 980 nm NIR excitation of 700 mW/cm^2.

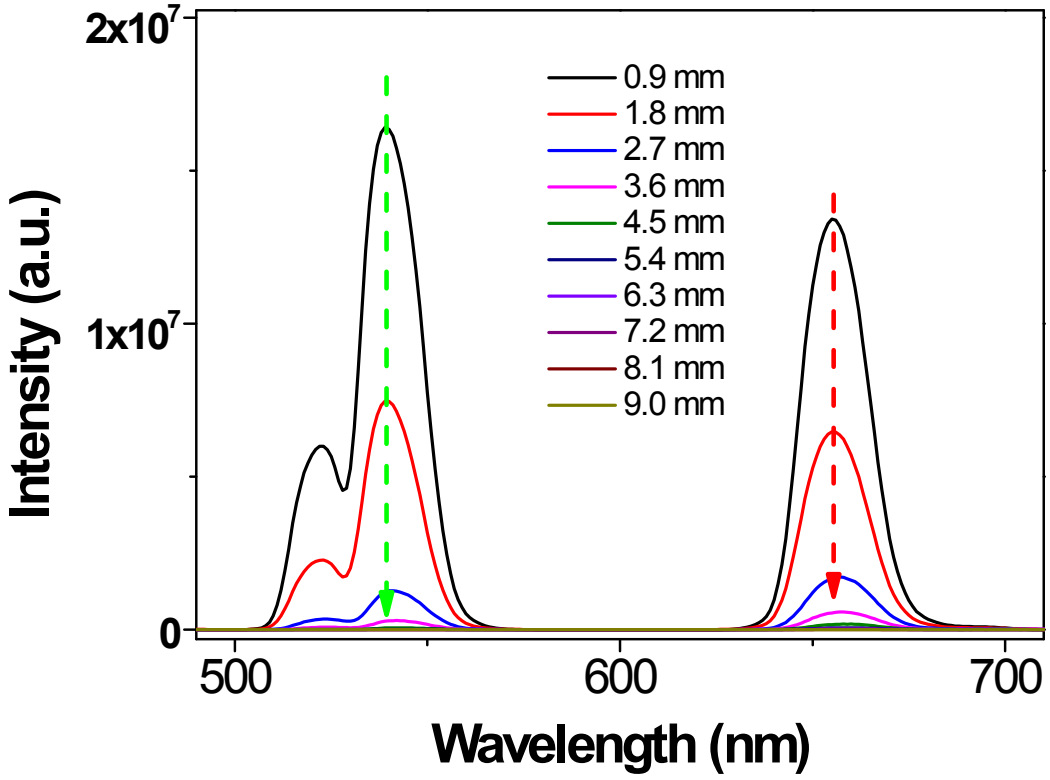

Figure S10. Upconversion luminescence spectra detected from Ref mode by embedding UCNPs at different depths in pork muscle tissue with 980 nm NIR excitation of 700 mW/cm^2.

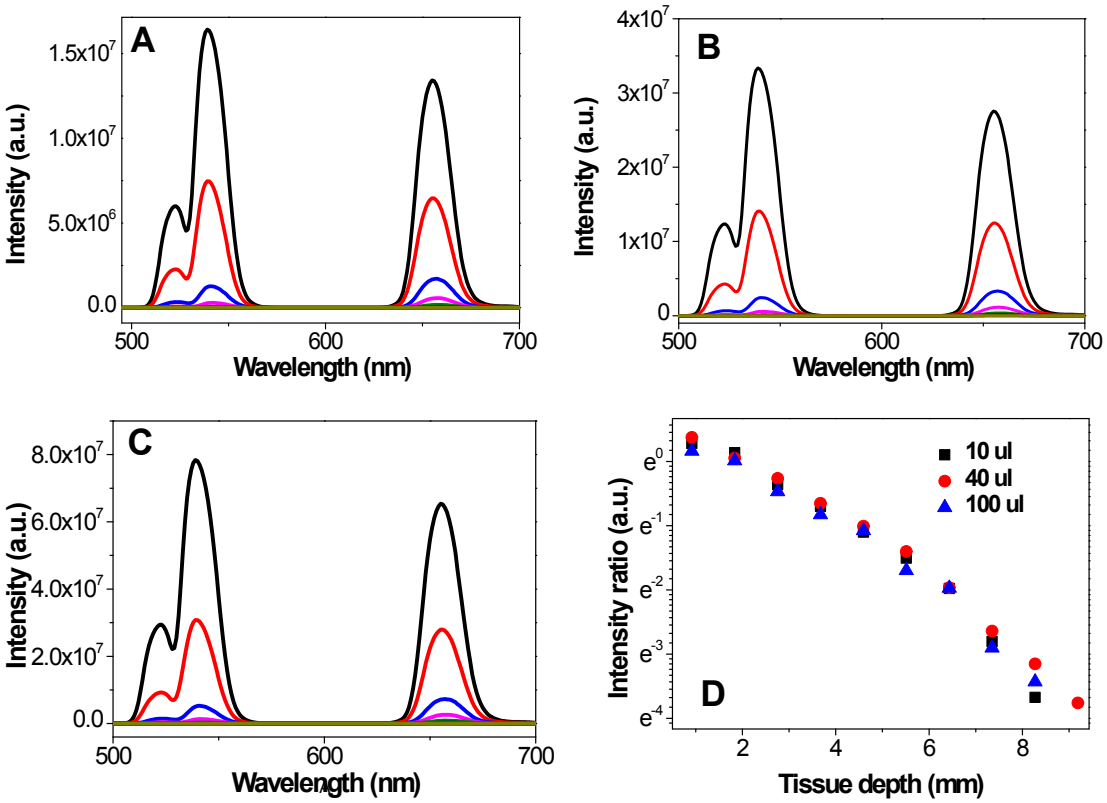

Figure S11. Upconversion luminescence spectra detected from Ref mode by embedding different amount of UCNPs (A-10 ul, B-40 ul, C-100 ul) and the corresponding G/R ratio (D) at different depths in pork muscle tissue with 980 nm excitation of 700 mW/cm^2.