

**Supporting information**

**Wet chemical synthesis of TGA capped Ag<sub>2</sub>S nanoparticles and their use for fluorescence imaging and temperature sensing in living cells**

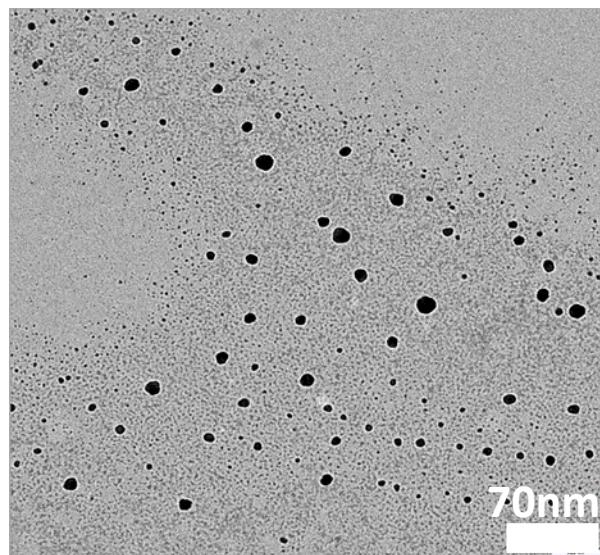
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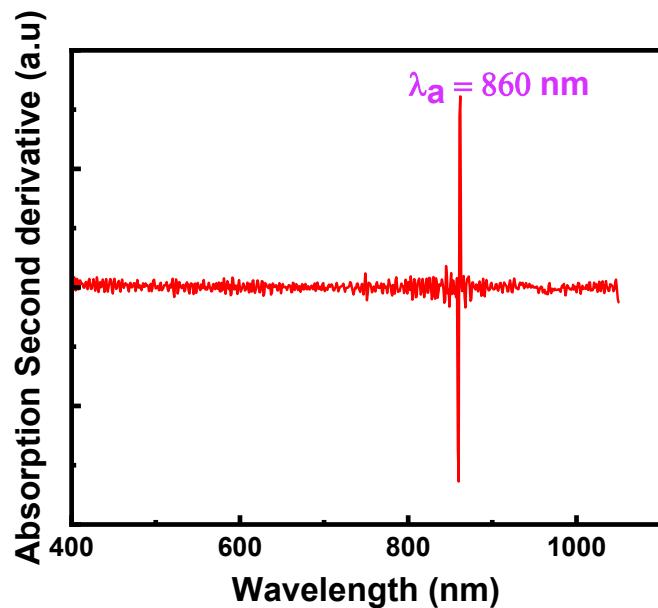
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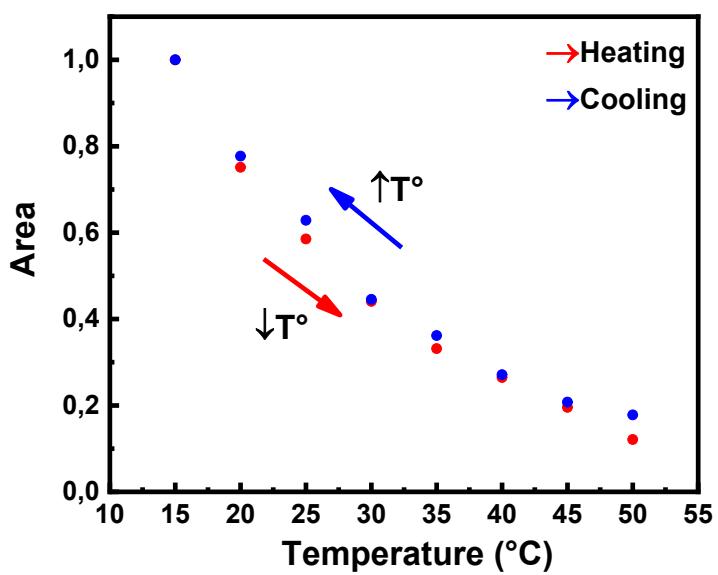
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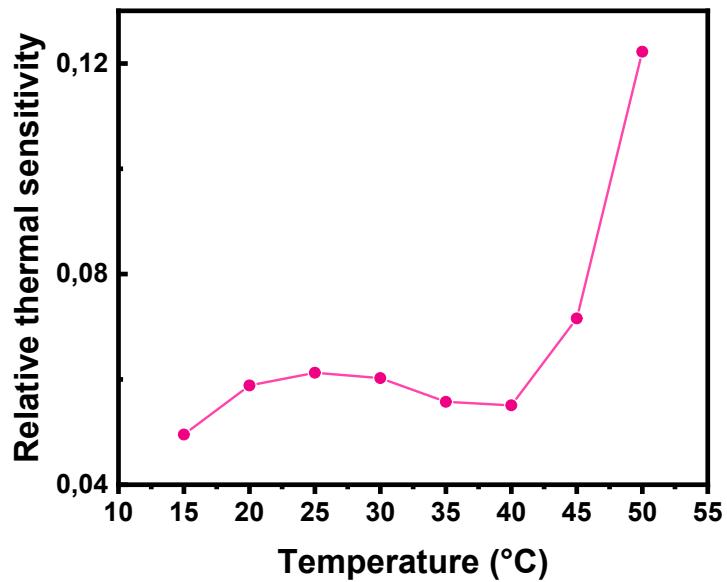
**Figure S<sub>1</sub>:** TEM images showing the presence of small and large aggregates of individual TGA-Ag<sub>2</sub>S nanoparticles.



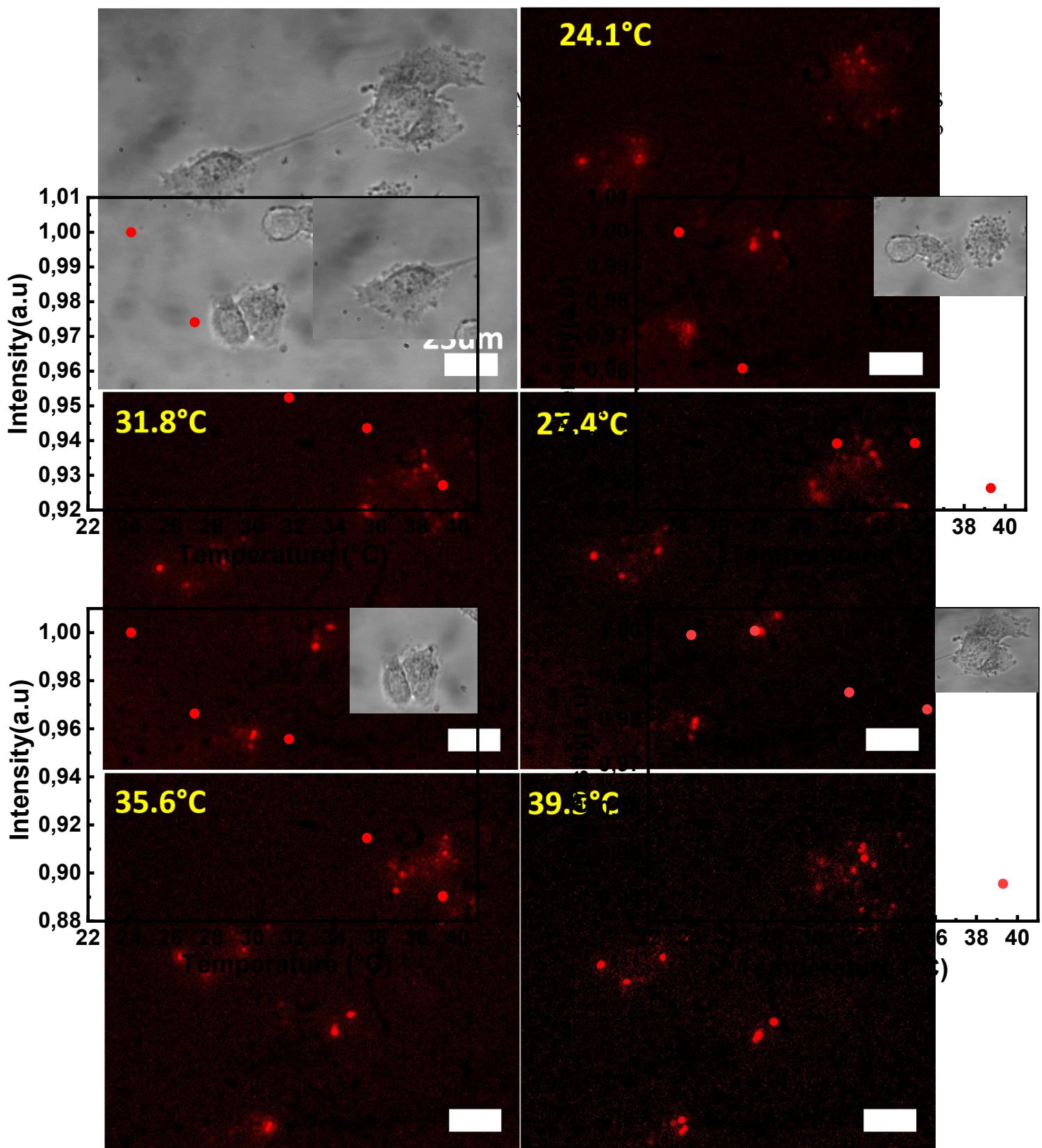
**Figure S<sub>2</sub>:** Second derivative of TGA-Ag<sub>2</sub>S nanoparticles dispersed in water.



**Figure S3:** Evolution of the integrated area of PL band of TGA-Ag<sub>2</sub>S nanoparticles dispersed in water and recorded for heating and cooling cycle under 488 nm excitation wavelength.



**Figure S4:** Variation of the relative thermal sensitivity deduced from the PL intensity of TGA-Ag<sub>2</sub>S nanoparticles dispersed in water and recorded under an excitation wavelength equal to 488 nm.



**Figure S<sub>6</sub>:** Evolution with temperature of the PL intensity extracted from Fluorescence images of U-87 living cells incubated with TGA-Ag<sub>2</sub>S nanoparticles and recorded at different temperature under an excitation wavelength equal to 488 nm.