SUPPORTING INFORMATION



Figure S1. Optimization of QH, core loading for maximum fluorescent per particle. The fluorescence per

particle is represented by the slope of fluorescence vs. concentration of nanoparticles.



Figure S2: spectrophotometer analysis of QH₂ **nanoparticles.** Spectrophotometer measurements at five different concentrations for (**A**) QH₂-100nm and (**B**) QH₂-50nm.



Figure S3: Performance of QH₂ loaded Nanoparticles as optoacoustic contrast agents. Optoacoustic spectra

of QH_2 -100nm (A) and QH_2 -50nm (B) at different concentrations.



Figure S4: Optoacoustic signal generation of QH₂-100nm at OD2.2, revealing the narrow optoacoustic band of QH2 nanoparticles.