Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Improving Photothermal Therapy Efficacy and Preventing Surface Oxidization of Bismuth Nanoparticles Through Forming Bismuth@Bismuth Selenide Heterostructure

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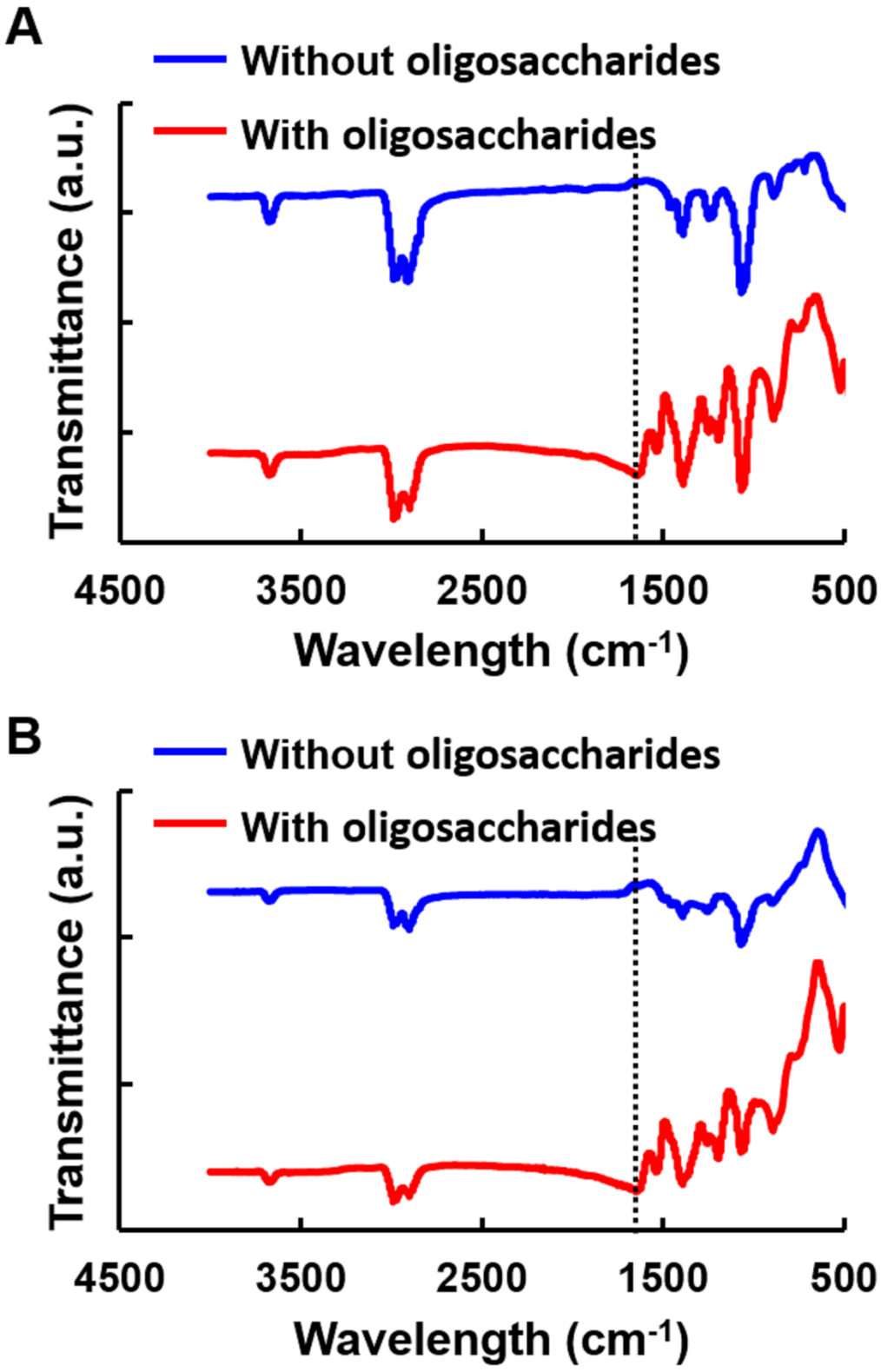

Figure S1. FTIR spectra of Bi and Bi@Bi_2Se_3 NPs with or without oligosaccharides modification.

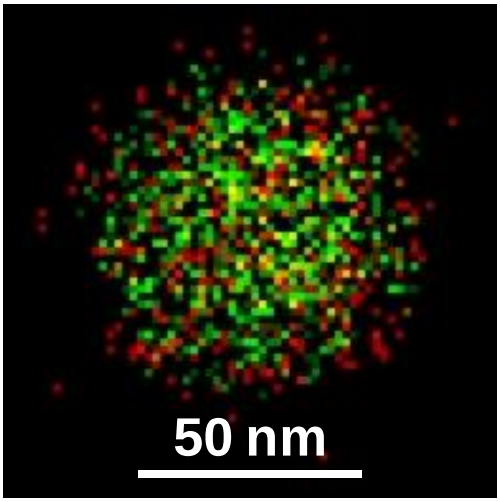

Figure S2. EDS analysis of Bi@Bi_2Se_3 NPs. Bi, green; Se, red.

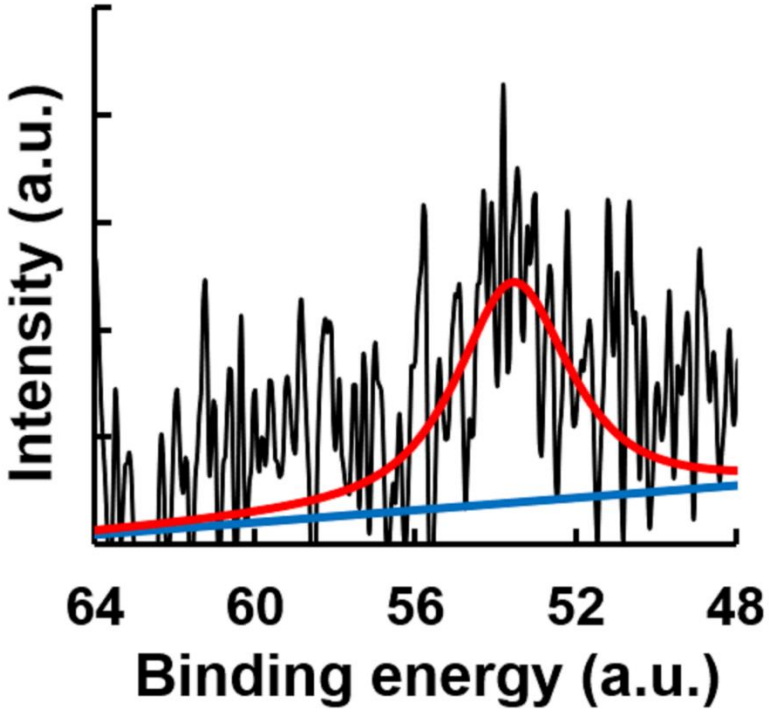

Figure S3. Se 3d XPS spectrum of Bi@Bi_2Se_3 NPs.

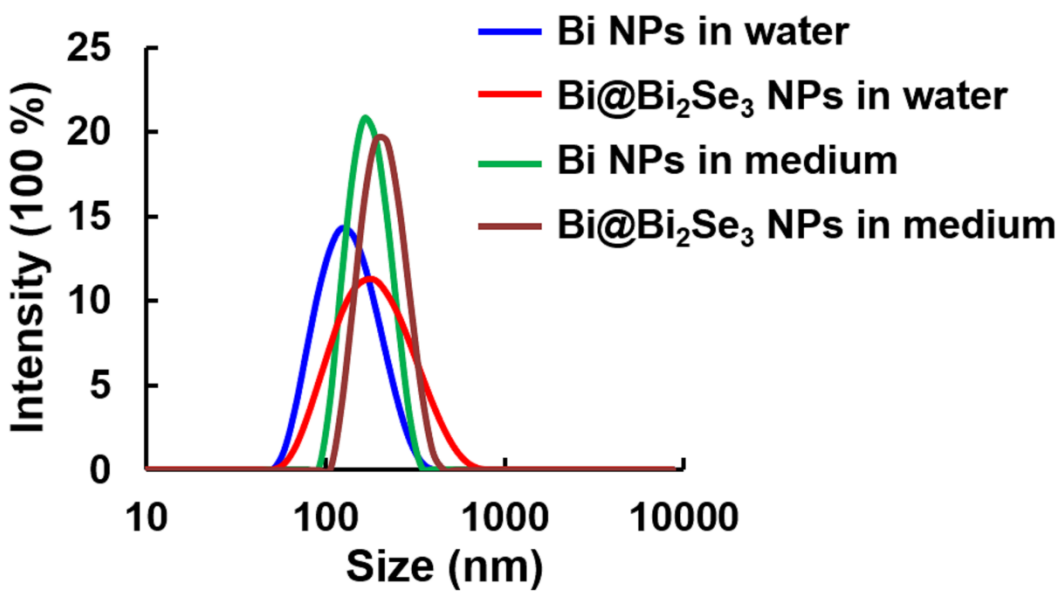

Figure S4. Hydrodynamic size of DLS of Bi and Bi@Bi_2Se_3 NPs in water and DMEM medium.

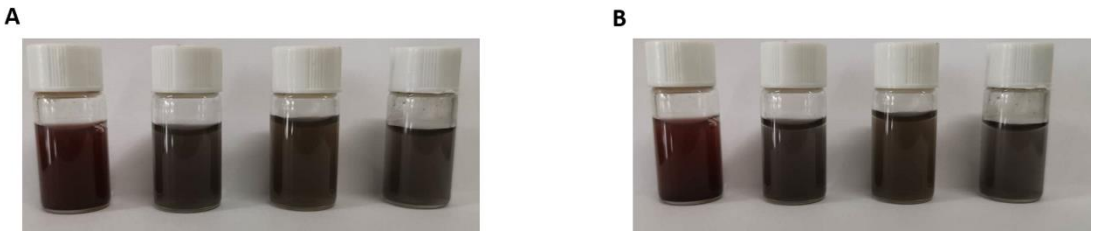

Figure S5. The photos of $Bi@Bi_2Se_3$ NPs dispersed in four physiological solutions (from left to right, DMEM, H_2O, PBS and PSF) before (A) and after five days (B).

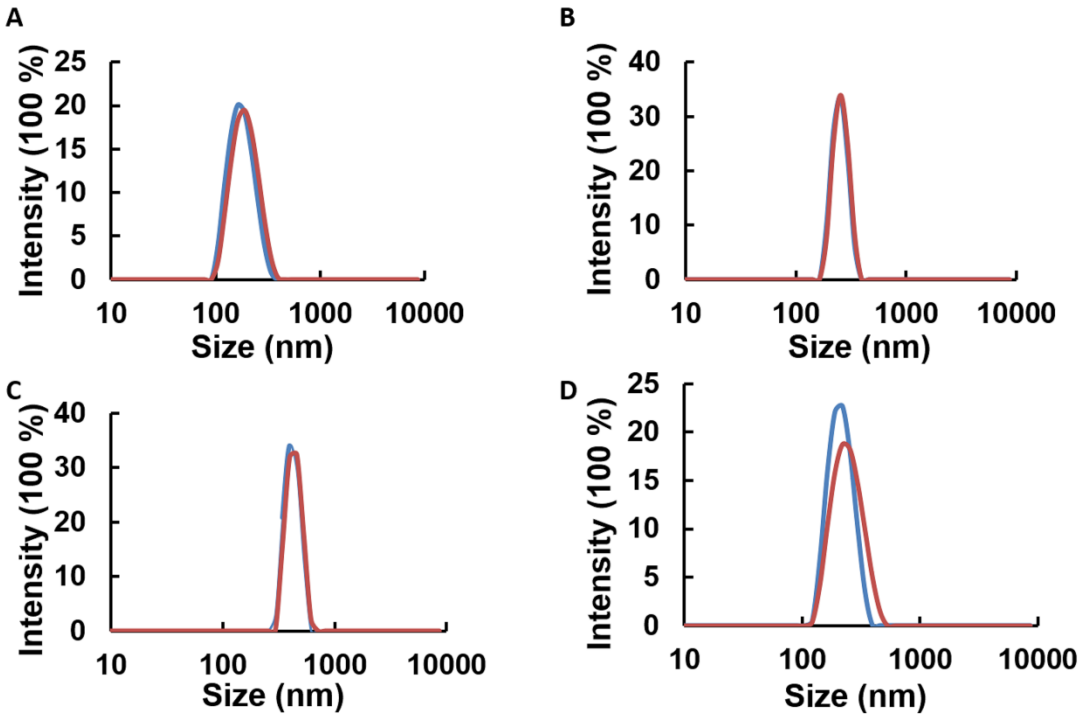

Figure S6. The DLS of Bi@Bi_2Se_3 NPs dispersed in four physiological solutions (H_2O (A), PBS (B), PSF (C) and DMEM (D)) before (blue) and after five days (red).

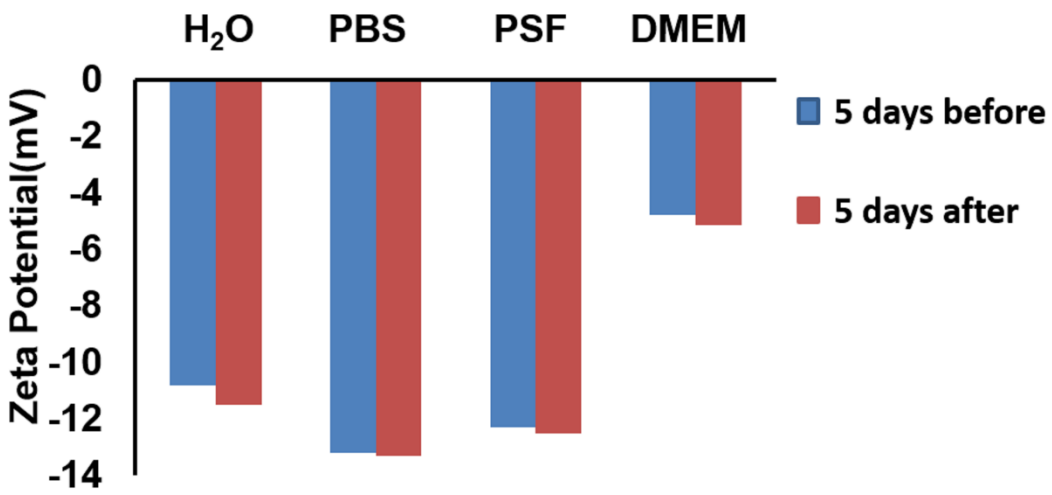

Figure S7. The Zeta Potential of $Bi@Bi_2Se_3$ NPs dispersed in four physiological solutions (blue) before and (Red) after five days.

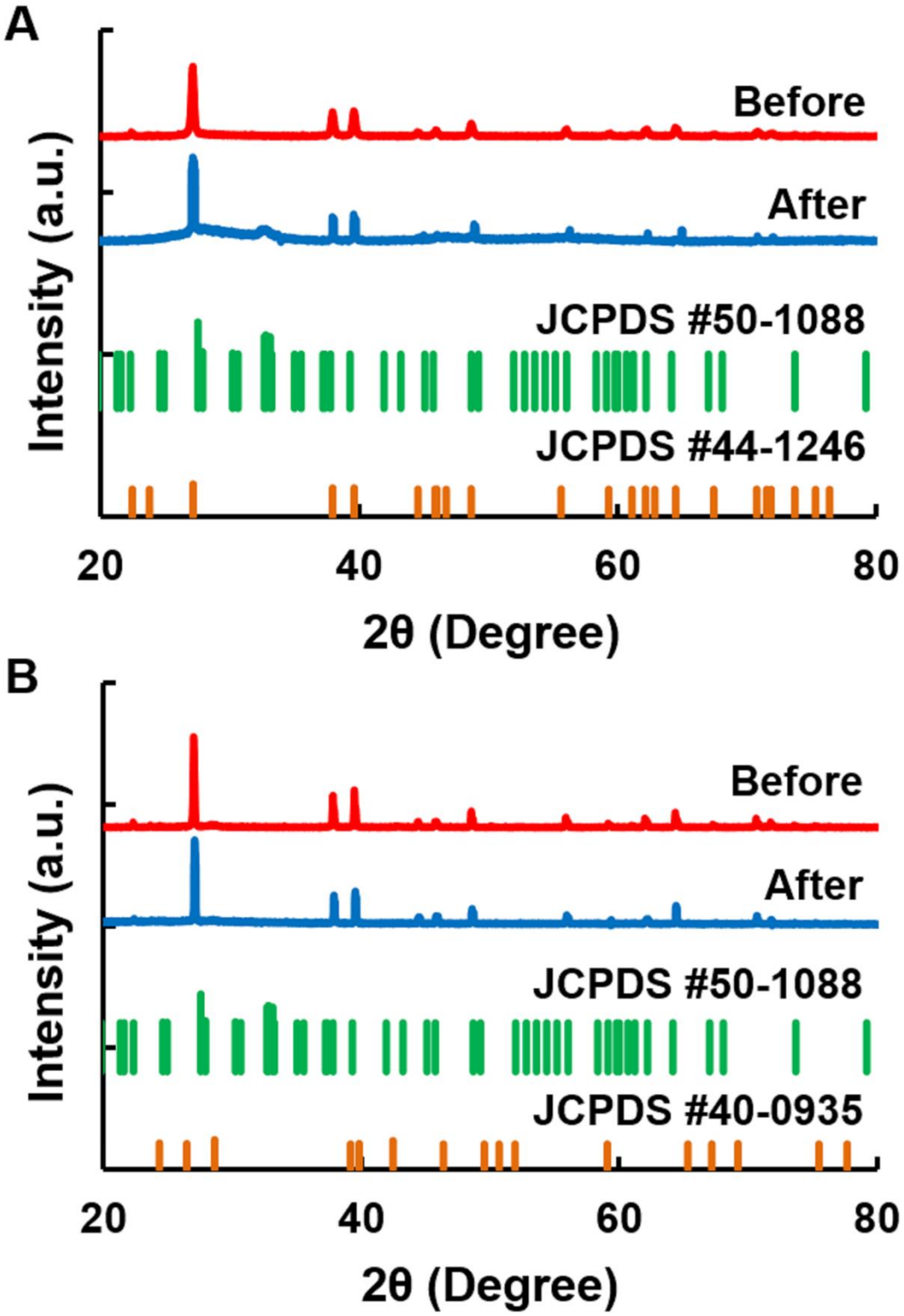

Figure S8. XRD patterns of Bi (A) and Bi@Bi_2Se_3 (B) NPs before and after storing for a month.

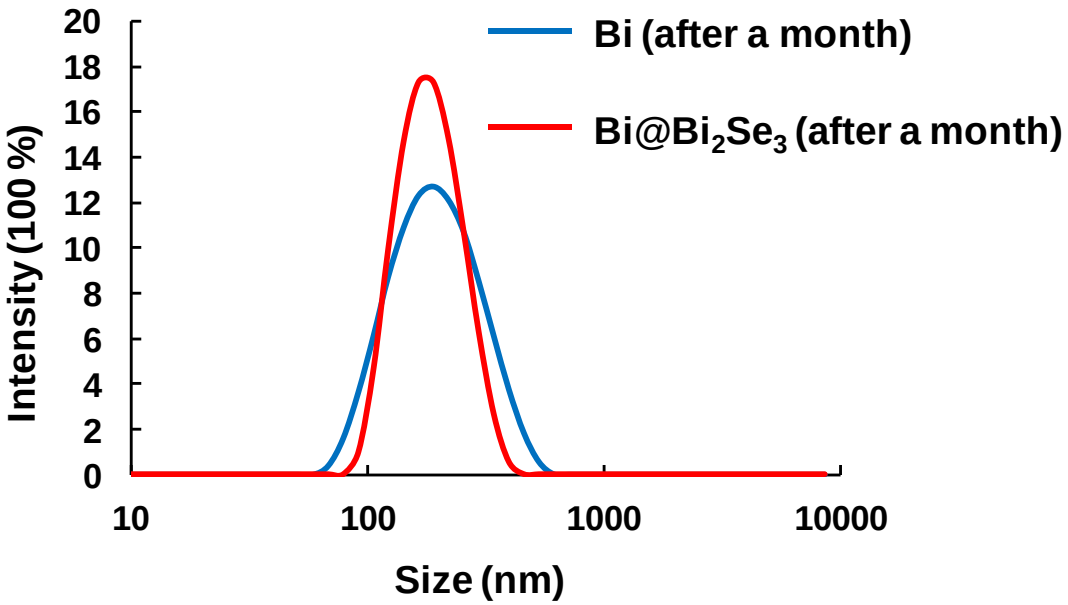

Figure S9. DLS of Bi and $Bi@Bi_2Se_3$ NPs after storing for a month.

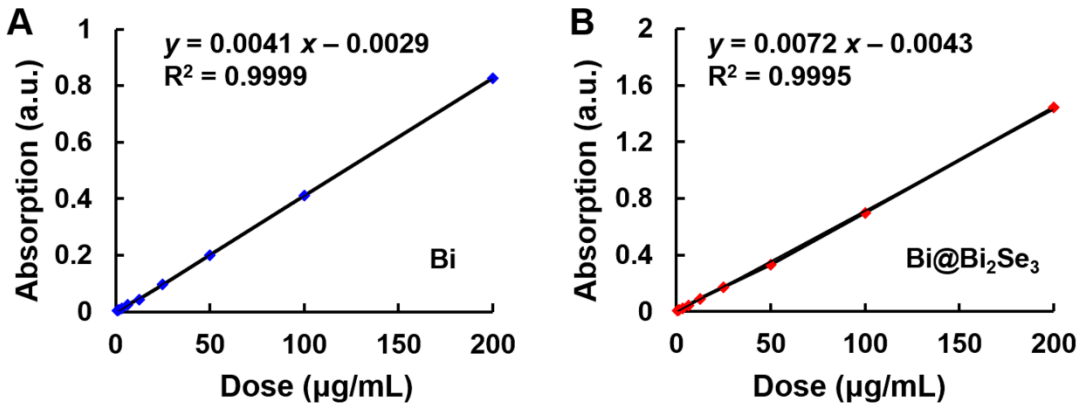

Figure S10. The absorption at 808 nm and the corresponding fitting curves of Bi (A) and Bi@Bi_2Se_3 (B) NP-dispersions at different doses.

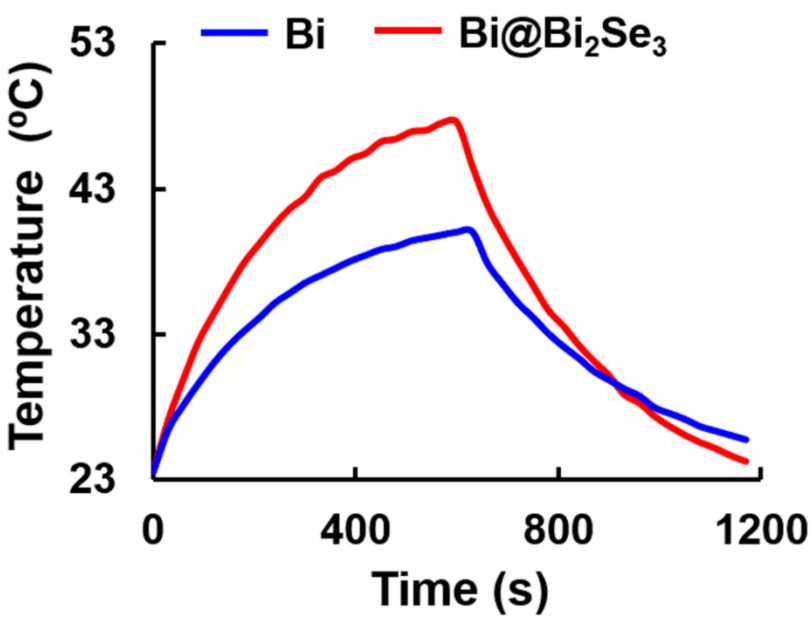

Figure S11. Heating and cooling curves of Bi and Bi@Bi_2Se_3 NPs.

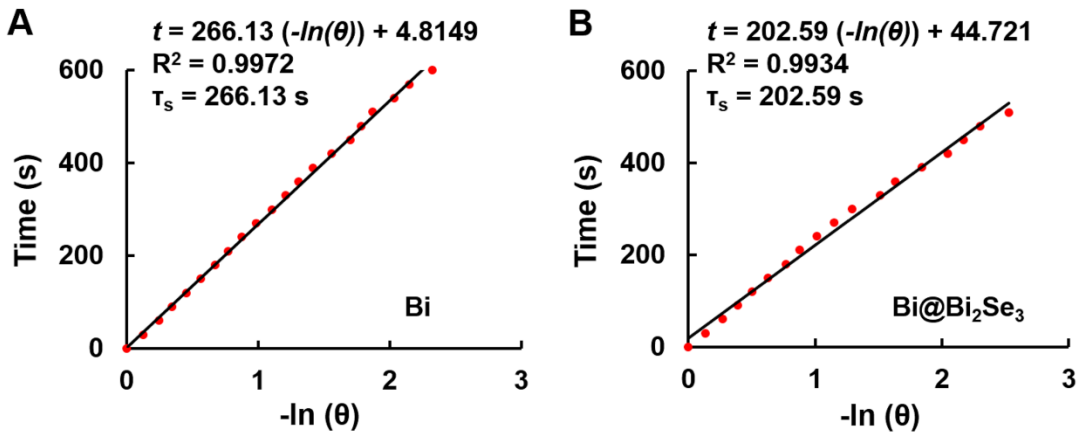

Figure S12. Plot and linear fit of time versus negative natural logarithm of the temperature increment for the cooling rate of Bi (A) and Bi@Bi_2Se_3 NPs (B) aqueous dispersions.

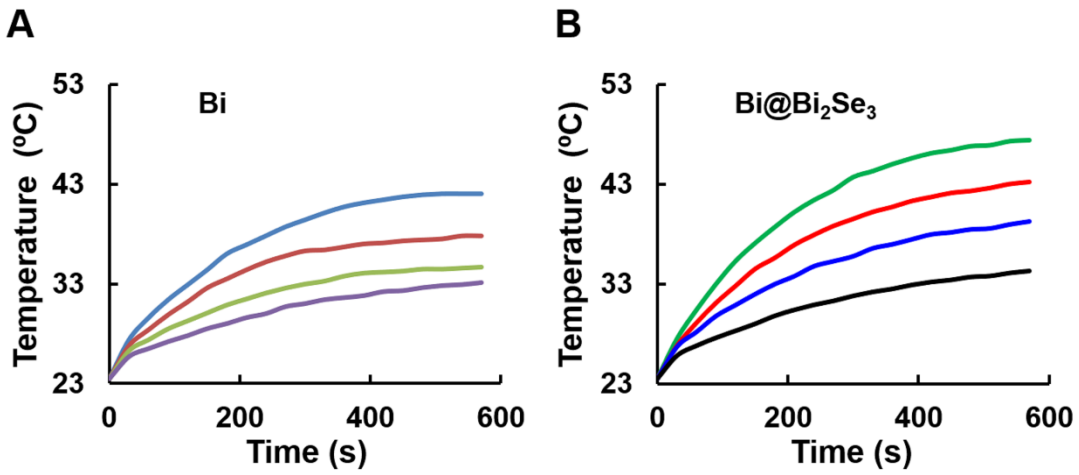

Figure S13. Temperature elevation curves of Bi (A) and $Bi@Bi_2Se_3$ (B) NPs (25, 50, 100 and 200 μg mL^{-1}) with 808 nm laser irradiation (1 W cm^{-2}, 10 min).

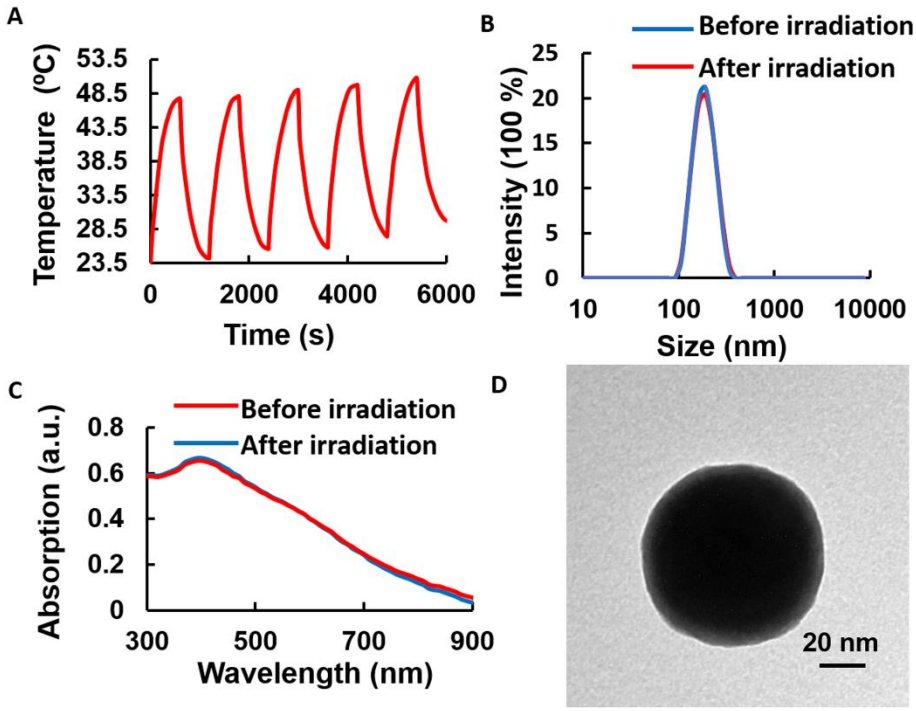

Figure S14. The NIR photostability of Bi@Bi_2Se_3 NPs. (A) The Heating and cooling curves of Bi@Bi_2Se_3 NPs aqueous dispersions (200 μg mL^{-1}) over 5 irradiation cycles. (B-D) DLS (B), UV-Vis spectra (C) and TEM image (D) results of Bi@Bi_2Se_3 NPs before and after irradiation.