Electronic Supplementary Material (ESI) for Nanoscale.


# Radio-Photothermal Therapy Mediated by a Single Compartment Nanoplatform Depletes Tumor Initiating Cells and Reduces Lung Metastasis in Orthotopic 4T1 Breast Tumor Model

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***Thermal gravimetric analysis (TGA).*** PEG-CuS NPs were purified and centrifugal filtration at 6000 RPM for 15 min (MWCO 100K). After lyophilization, 5.161 milligram of sample was transferred to an aluminum pan and analyzed on a thermogravimetric analyzer. Figure S1 shows the TGA of PEG-CuS NPs. Weight loss occurred between 25°C and 600°C.

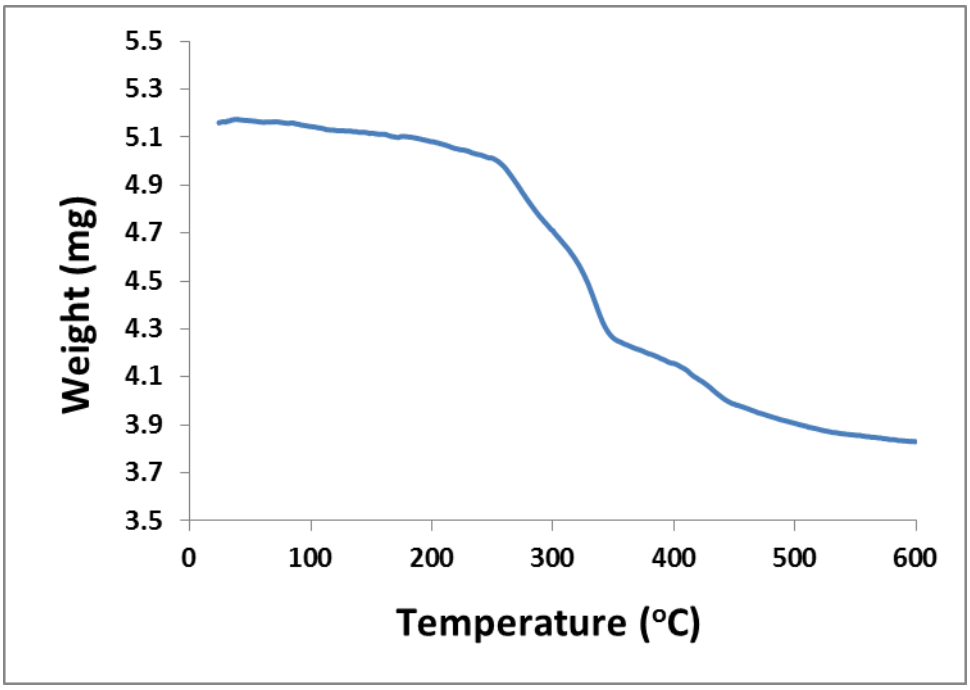


**Figure S1**. TGA of PEG-CuS NPs.

***Radiolabeling efficiency***. The radiolabeling efficiency and stability of the labeled NPs were analyzed using instant thin-layer chromatography. The chromatography strips were developed with phosphate-buffered saline (pH 7.4) containing 4 mM ethylenediaminetetraacetic acid and quantified using an IAR-2000 TLC imaging scanner (Bioscan, Washington, DC). To study the labeling stability, [$^{64}$Cu]CuS NPs were suspended in phosphate-buffered saline or mouse serum and incubated at 37 °C for 24 h. Free $^{64}Cu^{2+}$ ions moved to the solvent front, and the NPs remained at the original spot. The radioactivity at the original spot was recorded as a percentage of the total radioactivity of the chromatography strip.

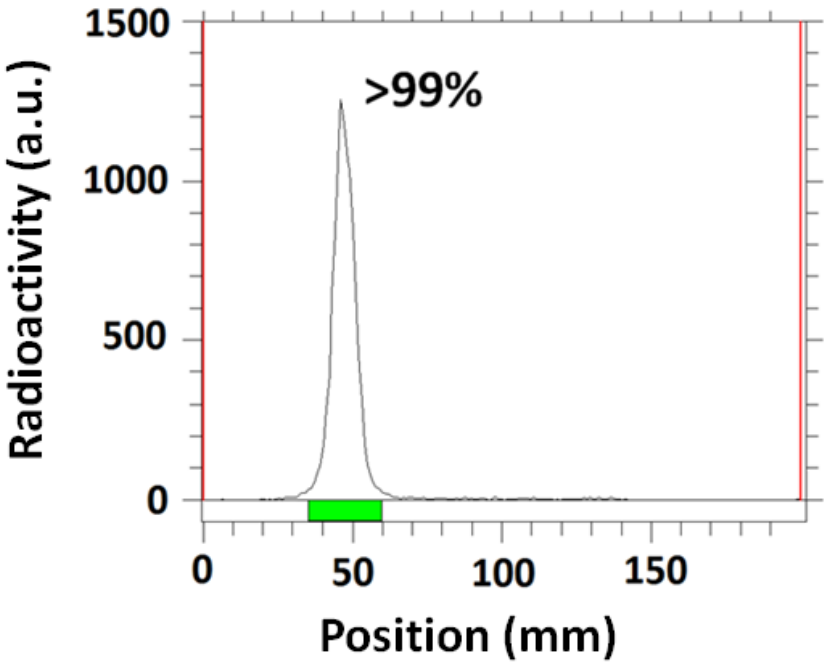


**Figure S2**. Radio-labeling efficiency of [$^{64}$Cu]CuS NPs. More than 99% of the radioactivity was associated with [$^{64}$Cu]CuS NPs at the end of synthesis. Incorporation of $^{64}$Cu into CuS NPs was almost quantitative.