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Supporting Information

Targeted heating of mitochondria greatly augments nanoparticle-mediated cancer chemotherapy

*Jiangsheng Xu, James G. Shamul, Hai Wang, John Lin, Pranay Agarwal, Mingrui Sun, Xiongbing Lu, Katherine H.R. Tkaczuk, Xiaoming He**

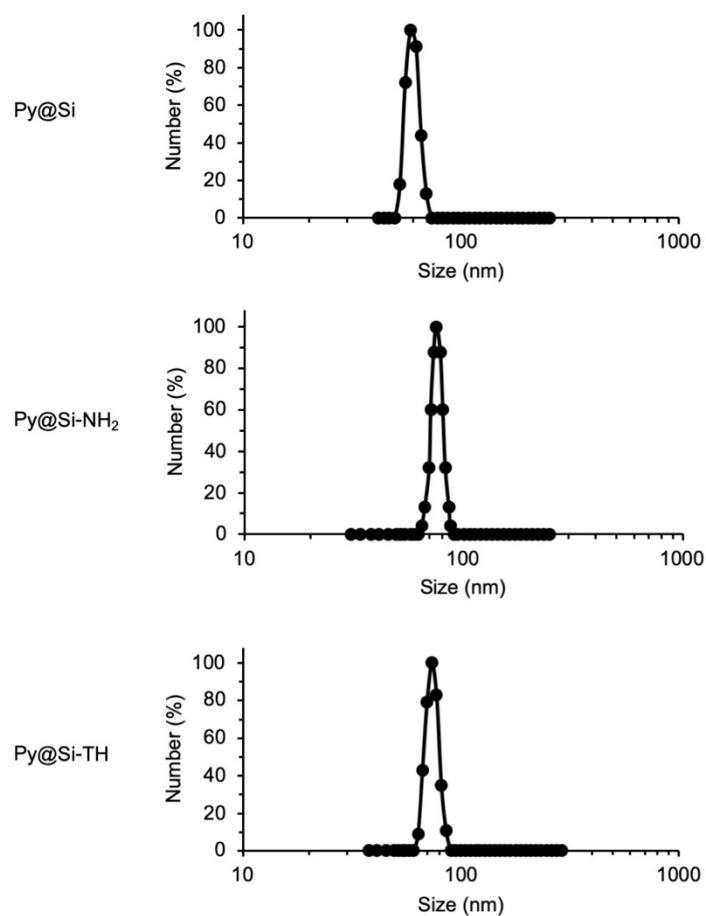


Figure S1. Size distribution of Py@Si-based nanoparticles with different surface modification in deionized water measured by dynamic light scattering (DLS). Py@Si nanoparticles: 59.2 ± 5.6 nm; Py@Si-NH₂ nanoparticles: 73.3 ± 4.8 nm; Py@Si-TH nanoparticles: 77.8 ± 7.6 nm.

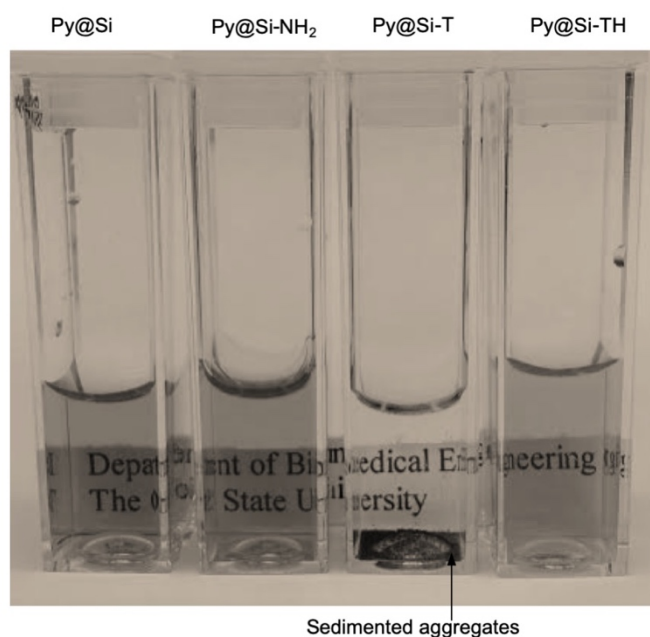


Figure S2. A typical picture of nanoparticles in deionized water after kept at room temperature for 6 days. Sedimented aggregates tend to form in the suspension of Py@Si-T nanoparticles. While the suspension of Py@Si-TH nanoparticles is clear and transparent, exhibiting good stability. The suspensions of Py@Si and Py@Si-NH₂ nanoparticles are also stable.

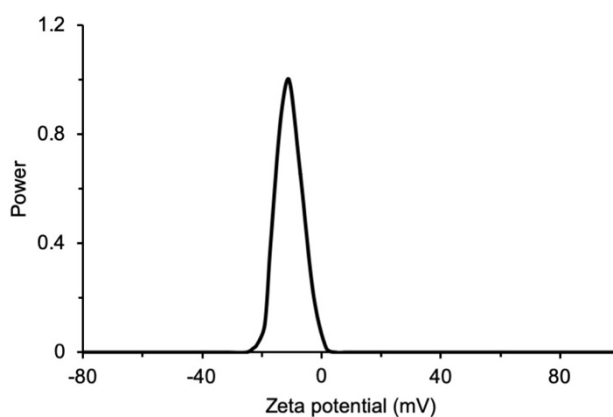


Figure S3. Surface zeta potential of Py@Si-TH at pH 6.0 (-10.9 ± 4.3 mV).

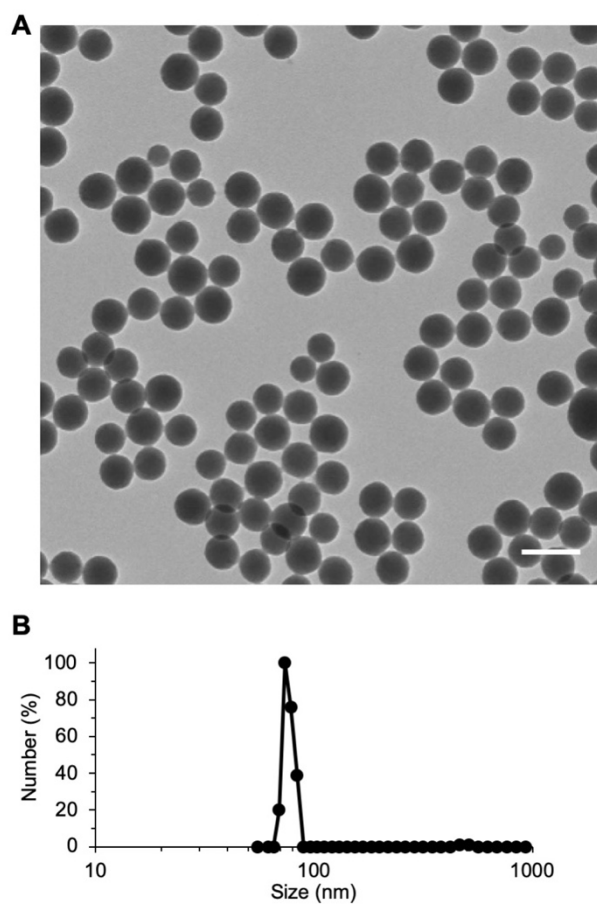


Figure S4. DOX encapsulation does not significantly affect the size and surface zeta potential of the Py@Si-TH nanoparticles. **A)** TEM image of Py@Si-TH-DOX nanoparticles. Scale bar: 100 nm. **B)** Size distribution (74.8 ± 6.9 nm) of Py@Si-TH-DOX nanoparticles incubated in cell culture medium at 37 °C for 12 h measured by dynamic light scattering (DLS).

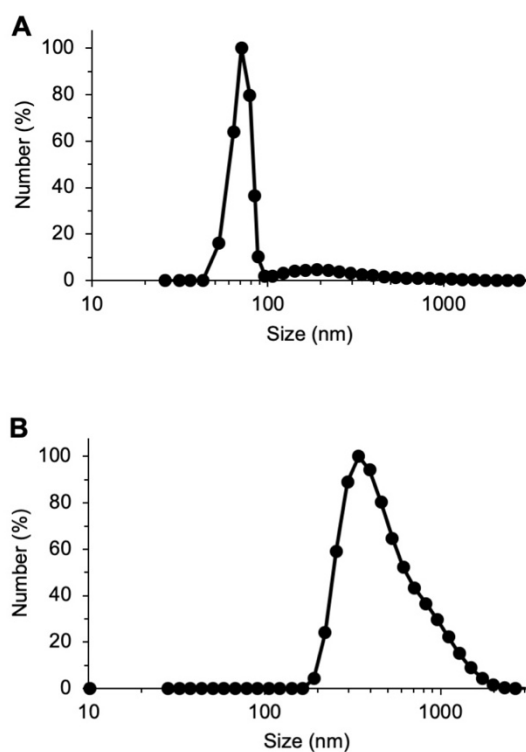


Figure S5. Size distribution of Py@Si-TH-DOX nanoparticles (with HA decorated on their surface, **A**) and Py@Si-T-DOX nanoparticles (with no HA on their surface, **B**) incubated in human blood serum at 37 °C for 12 h measured by dynamic light scattering (DLS). The Py@Si-TH-DOX and Py@Si-T-DOX nanoparticles are 70.7 ± 18.4 nm and 577.4 ± 254.6 nm, respectively.

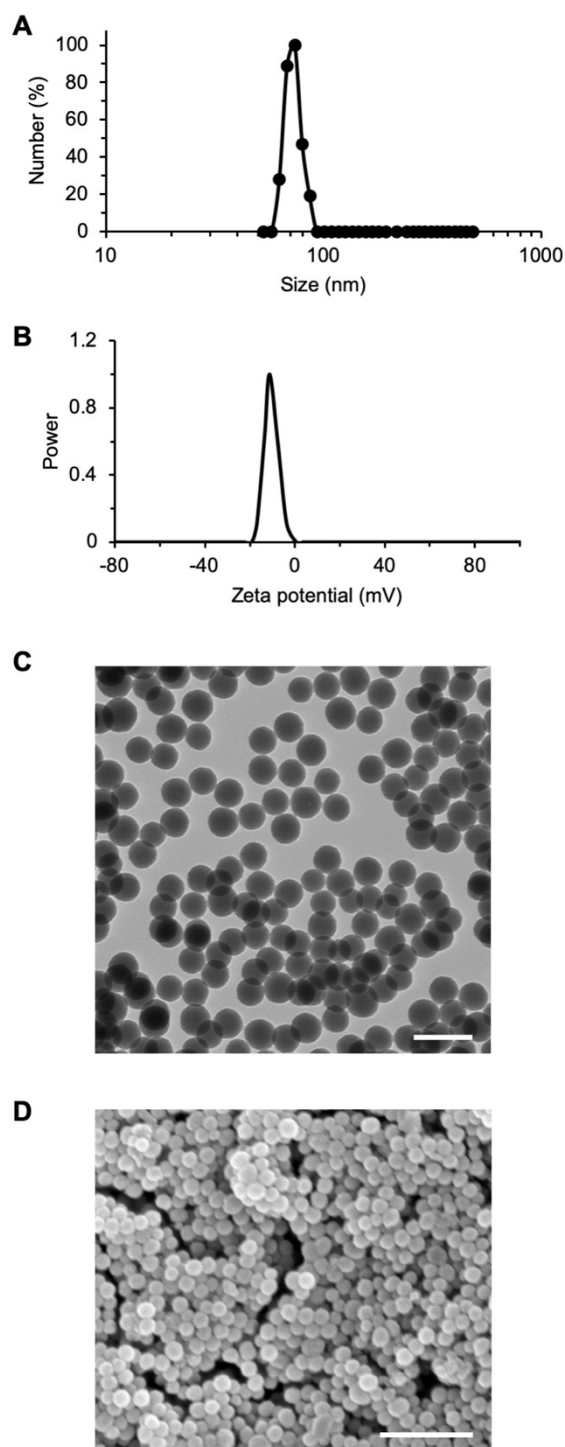


Figure S6. Characterization of Py@Si-H nanoparticles. **A)** Size distribution (73.3 ± 7.8 nm). **B)** Surface zeta potential (-11.3 ± 3.6 mV). **C)** TEM image. Scale bar: 100 nm. **D)** SEM image. Scale bar: 500 nm.

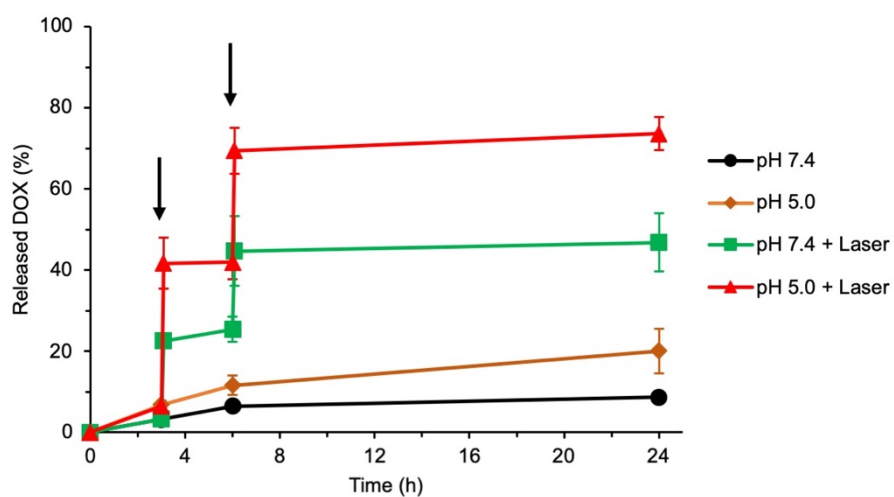


Figure S7. Release of DOX from the Py@Si-TH-DOX nanoparticles is slightly pH dependent and can be controlled by NIR laser irradiation. The NIR laser irradiation (indicated by arrows at two different times) was at 1.0 W/cm^2 for 1 min.