

Supporting Information

The Stiffness-Dependent Tumor Cell Internalization of Liquid Metal Nanoparticles

Jing He,[†] Wen Pang,[†] Bobo Gu,[†] Xubo Lin,[‡] and Jian Ye^{†,ϕ,Δ,}*

[†]State Key Laboratory of Oncogenes and Related Genes, School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai 200030, P. R. China

[‡]Institute of Single Cell Engineering, Key Laboratory of Ministry of Education for Biomechanics and Mechanobiology, Beijing Advanced Innovation Center for Biomedical Engineering, School of Biological Science and Medical Engineering, Beihang University, Beijing 100191, P. R. China.

^ϕInstitute of Medical Robotics, Shanghai Jiao Tong University, Shanghai 200240, P.R. China

^ΔShanghai Key Laboratory of Gynecologic Oncology, Ren Ji Hospital, School of Medicine, Shanghai Jiao Tong University, Shanghai 200127, P. R. China

*To whom correspondence should be addressed. *E-mail:* yejian78@sjtu.edu.cn;

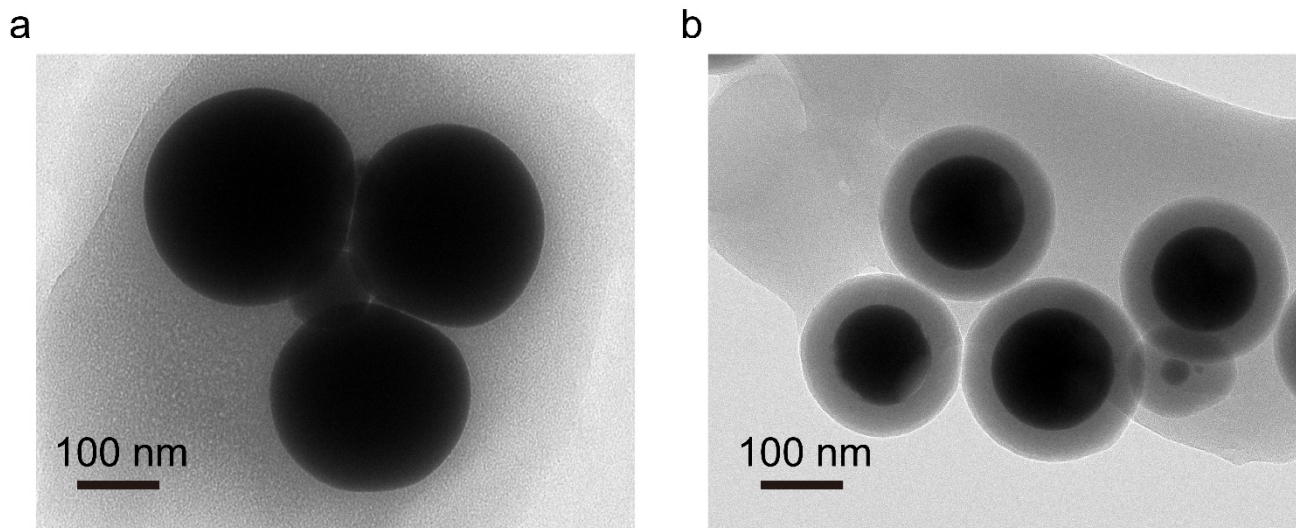


Figure S1. TEM images of EGaIn@citrate NPs (a) and EGaIn@SiO₂ NPs (b).

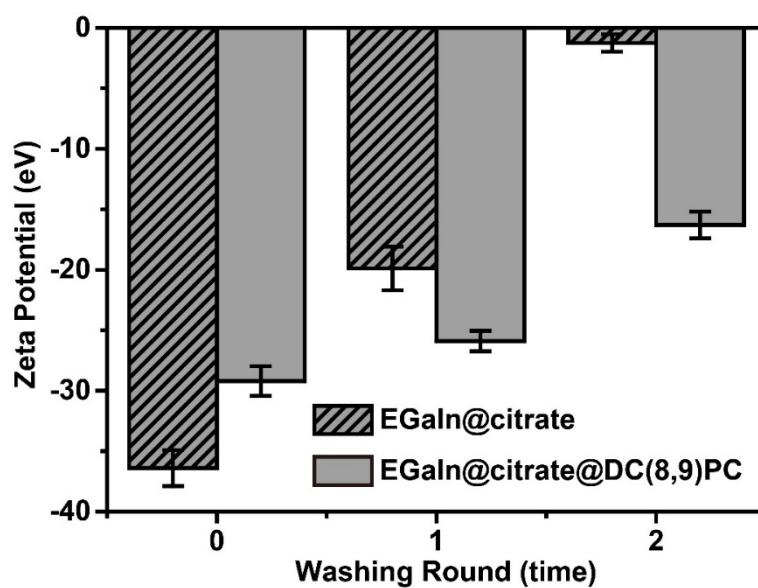


Figure S2. Zeta potentials of EGaIn@citrate NPs with/without the modification of crosslinked DC(8,9)PC after different washing round.

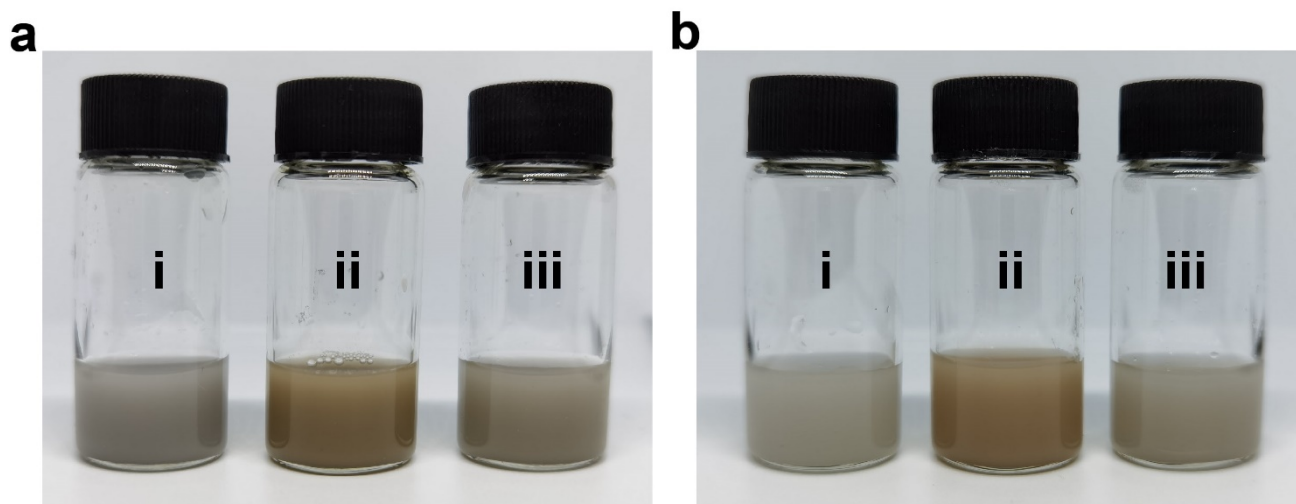


Figure S3. Appearance of LM NPs dispersed in water before and after the modification of DC(8,9)PC crosslink ((a) and (b) are LM NPs without/with SiO₂ wrapping, respectively). (i) The dispersed NPs with dissolved DC(8,9)PC. (ii) The dispersed NPs with dissolved DC(8,9)PC and its crosslink induced by 254 nm ultraviolet for 2 h. (iii) The dispersed NPs with dissolved DC(8,9)PC and its crosslink induced by 254 nm ultraviolet for 2 h, then filtered.

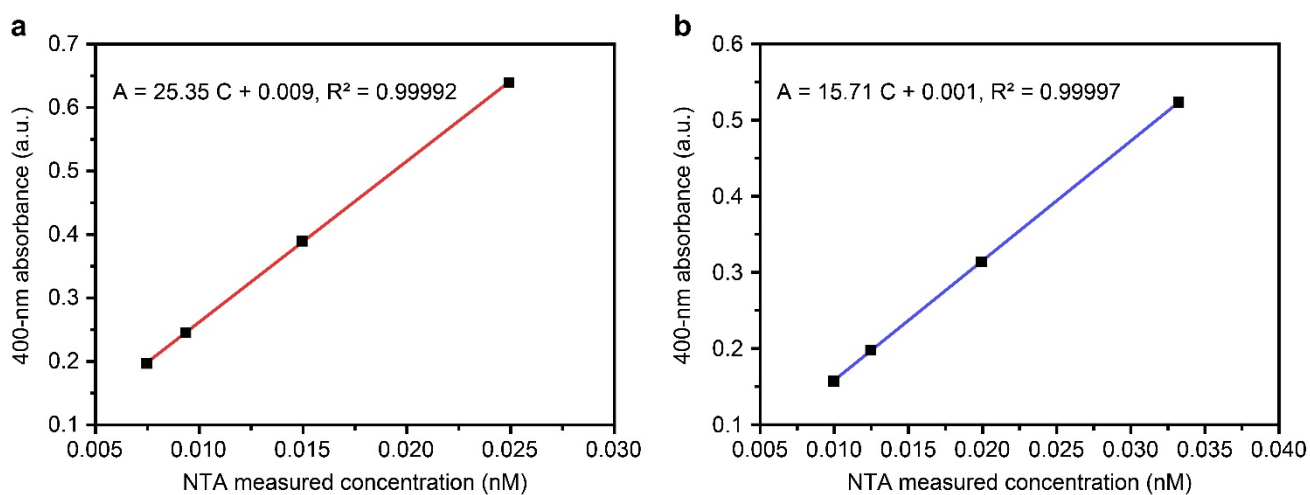


Figure S4. Linear relationship between the absorbance at 400 nm and NTA measured concentration of DC(8,9)PC crosslink modified LM NPs (a) without and (b) with SiO₂ wrapping.

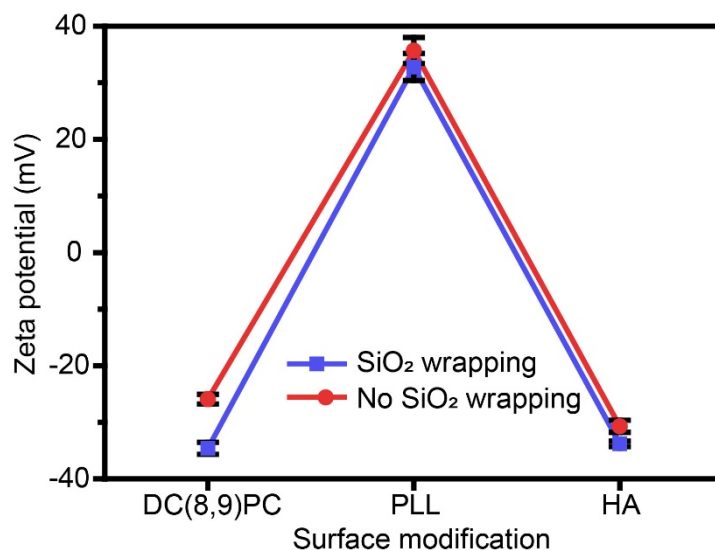


Figure S5. Zeta potential variations of DC(8,9)PC crosslink modified LM NPs (red) without and (blue) with SiO₂ wrapping during the layer-by-layer assembly.

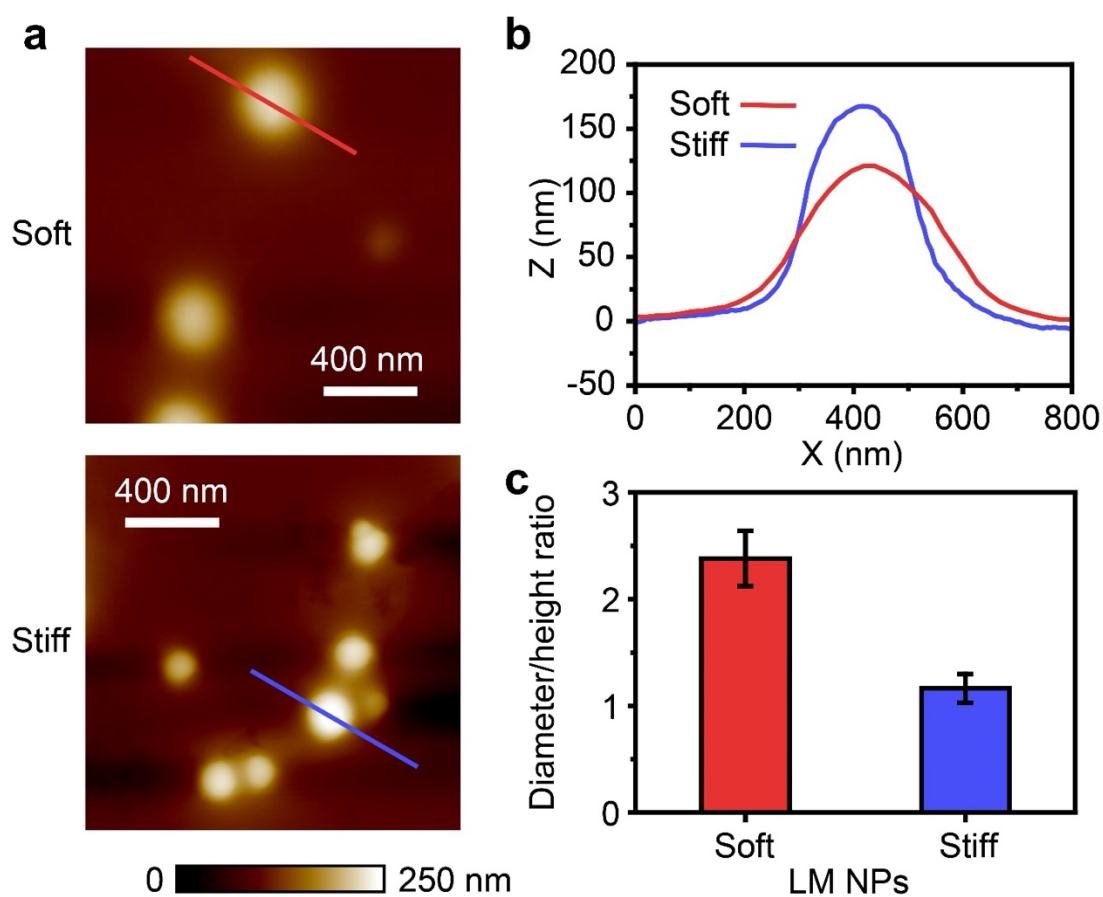


Figure S6. (a) AFM measured height profile of soft and stiff LM NPs. (b) Height cross-section of two single soft and stiff LM-based NPs, labeled in (a) with red and blue lines, respectively. (c) Statistical height to diameter ratio of soft and stiff LM NPs ($n = 5$). AFM tip OMCL-AC160TN-R3 was used in these experiments.

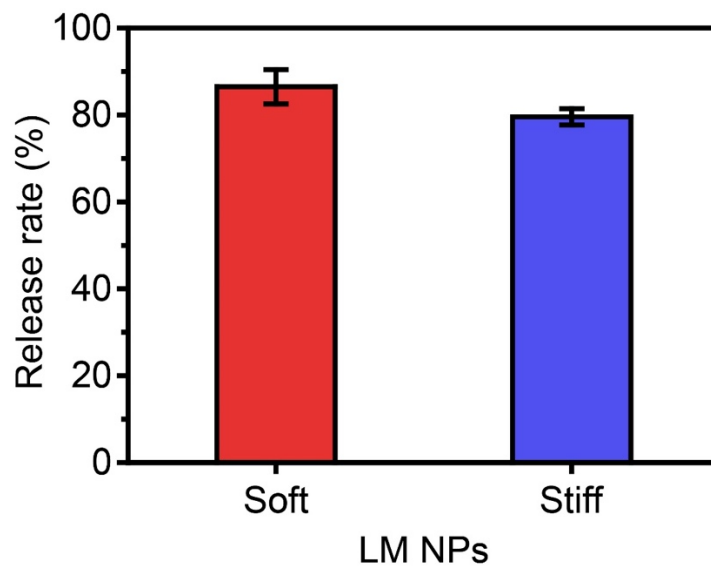


Figure S7. Release rate of Dox from soft and stiff LM NPs, treated in the simulated lysosome environment for 5 min.

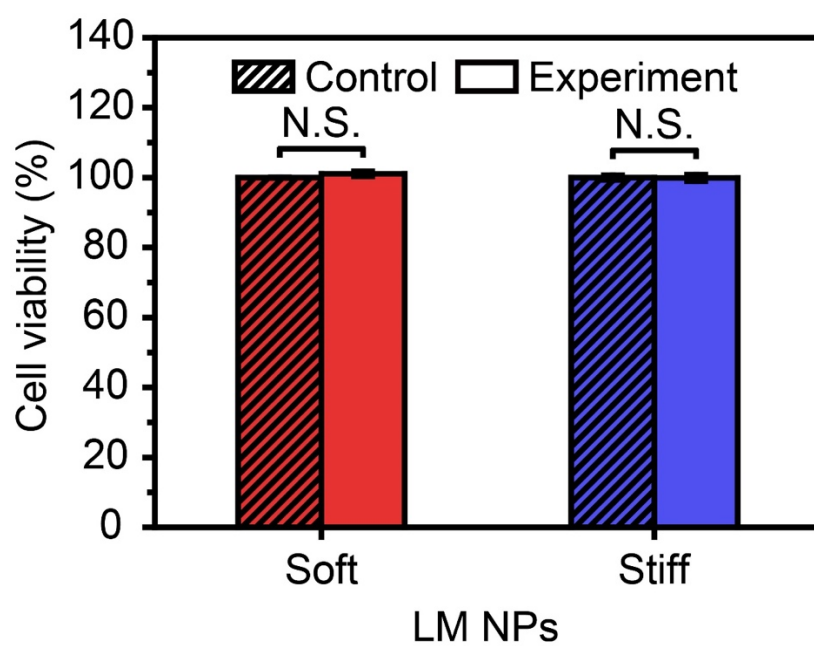


Figure S8. Viabilities of HeLa cells co-incubated with soft and stiff LM NPs for 4 h (n = 3, N.S.: no significant difference).

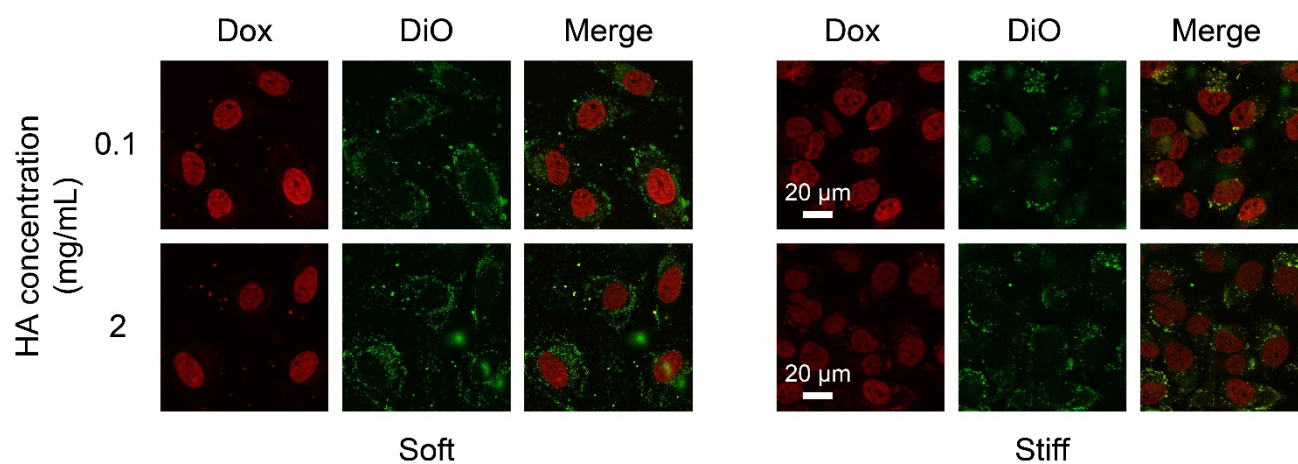


Figure S9. CLSM images of HA-pretreated HeLa cells co-incubated with soft and stiff LM NPs and then stained with DiO.



videoS1.avi

Video S1. Vibration of the core of the stiff LM NPs.