Supporting Information

Charge-reversal functionalized PLGA nanobubbles as theranostic agents for ultrasonic imaging-guided combination therapy

Hong Yang ^{1, 3}, Xue Shen ¹, Jie Yan ¹, Xiaoxue Xie ¹, Zhongyuan Chen¹, Tingting Li ¹,

Shun Li^{1,3}, Xiang Qin^{1,3}, Chunhui Wu^{1,3}, Yiyao Liu^{1,2,3*}

¹ Department of Biophysics, School of Life Science and Technology, University of Electronic Science and Technology of China; ² School of Clinical Medicine/the Affiliated Hospital, Chengdu University of Traditional Chinese Medicine; ³ Center for Information in Biology, University of Electronic Science and Technology of China, Chengdu 610054, Sichuan, P. R. China

* To whom correspondence should be addressed:

Prof. Yiyao Liu, Ph.D

Department of Biophysics, School of Life Science and Technology, University of Electronic Science and Technology of China, Chengdu 610054, Sichuan, P. R. China. Tel: +86-28-8320-3353, fax: +86-28-8320-8238, E-mail: <u>liuyiyao@uestc.edu.cn</u> or <u>liuyiyao@hotmail.com</u>



Figure S1. Characterization of PAH-Cit. (**A**) Proton nuclear magnetic resonance (¹H-NMR) spectrum of PAH-Cit. (**B**) Fourier transform infrared spectroscopy (FT-IR) spectrum of PAH-Cit.



Figure S2. Cellular uptake of the Dox in MCF-7 and MCF-7/ADR cells treated with free Dox, Dox-NBs/PPP, Dox-NBs/PPP/SC shRNA and Dox-NBs/PPP/P-gp shRNA for 72 h detected by fluorescence activated cell-sorting (FACS) analysis.



Figure S3. *In vitro* cell viability of HUVEC, HeLa, MCF-7 and MCF-7/ADR cells after treatment with NBs/PPP at the concentration of 0-200 μ g/mL for 48 h.



Figure S4. Fluorescence microscopy images of MCF-7 cells (**A**) and MCF-7/ADR cells (**B**) after various treatments. All the cells were co-stained with Calcein-AM and propidium iodide. Green and red colors represent live and dead cells, respectively.