

Supporting Information

An Implantable Ionic Therapeutic Platform for Photodynamic Therapy with Wireless Capacitive Power Transfer

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Other Supplementary Materials for this manuscript include the following:

Movie S1 (mp4 format). Light emitting operation of i-WLDD in living mouse.

Movie S2 (mp4 format). Light emission of i-WLDD according to frequency change of external voltage.

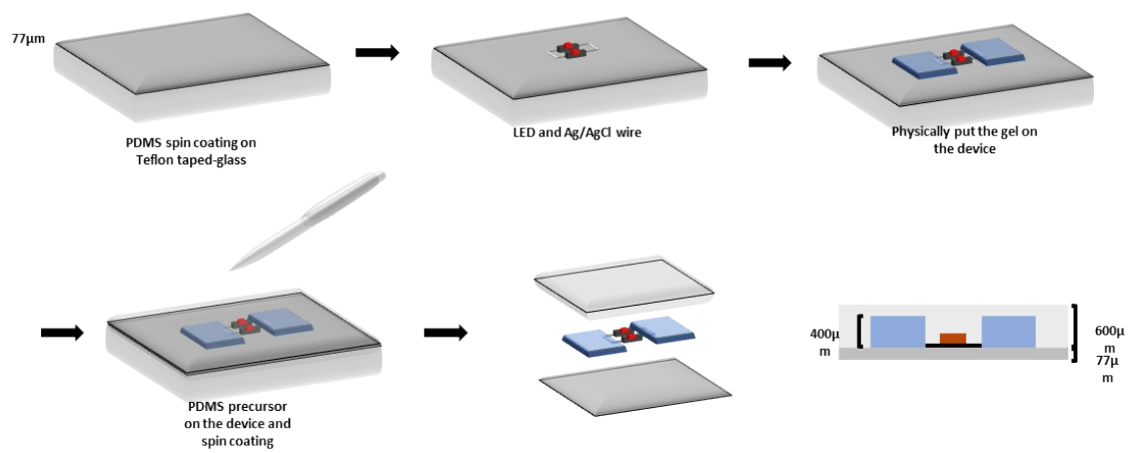


Figure S1. Schematic diagram of fabrication of i-WLDD

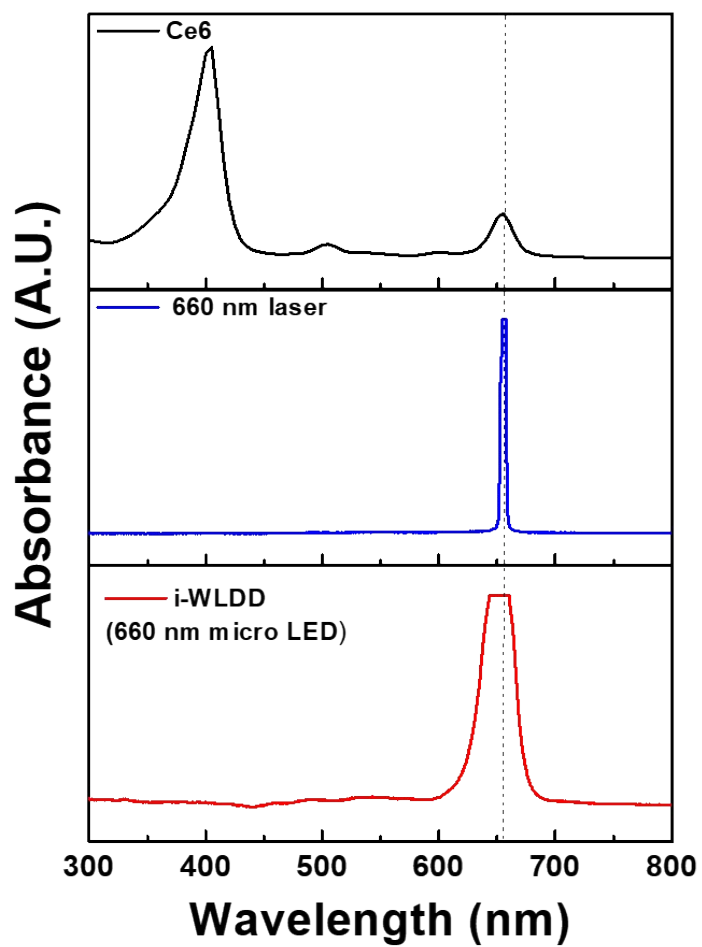


Figure S2. Absorption peaks of Ce6 spectrum and optical emission spectrum of i-WLDD and laser with the wavelength of 660 nm for Direct Light group

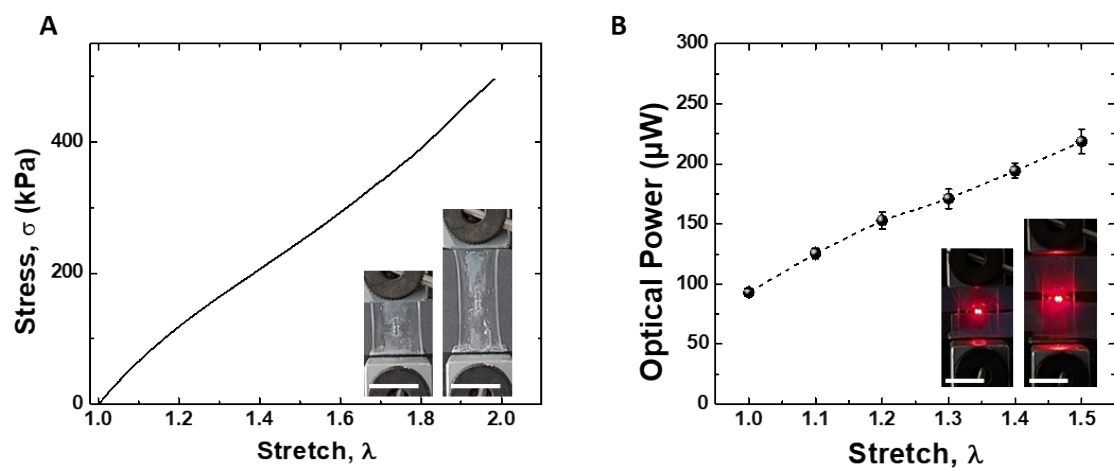
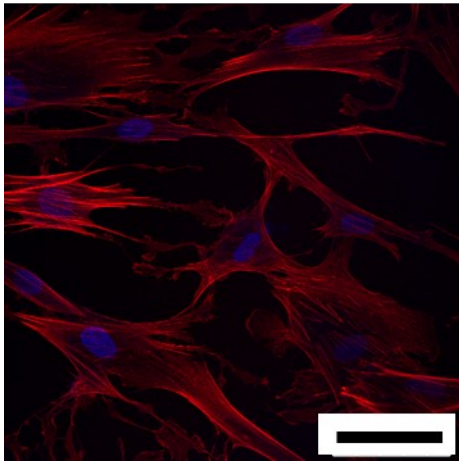


Figure S3. Mechanical properties of i-WLDD. (A) Stress Strain graph at 0.5 min⁻¹. (B) Optical power change under uniaxial strain up to 150%.

On Culture Plate



On i-WLDD

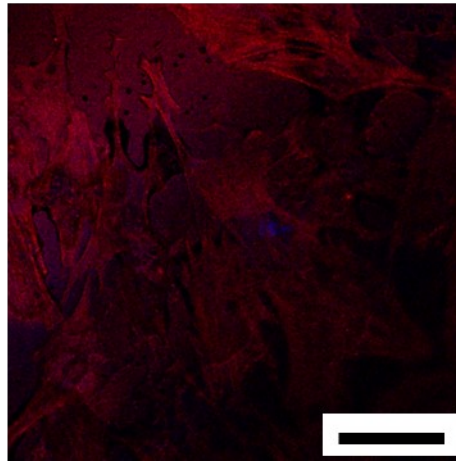


Figure S4. *In vitro* cell attachment on i-WLDD using HDF: Confocal images after culturing HDF for 1 day on culture plate, and on i-WLDD (scale bar 75 μ m)

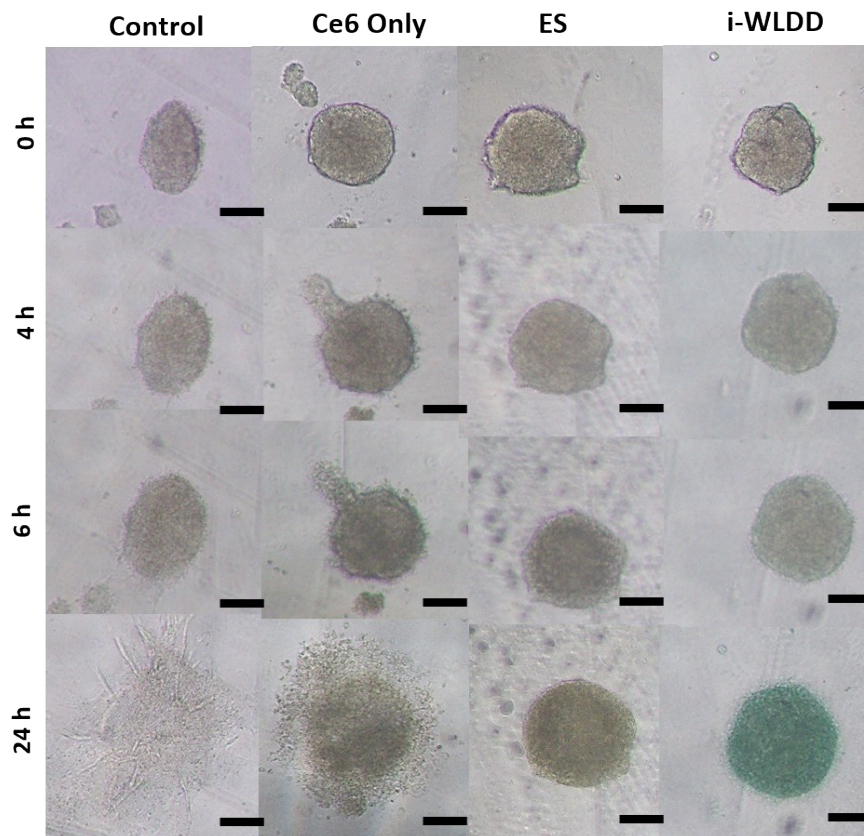


Figure S5. *In vitro* invasion observation of 4T1 spheroids with the size of 400 μm as function of time. After 24 hr of culturing after various treatments (control group (untreated), Ce6 Only (only Ce6 injected), ES (Electrical Stimulation only), and i-WLDD group) for 30 min.

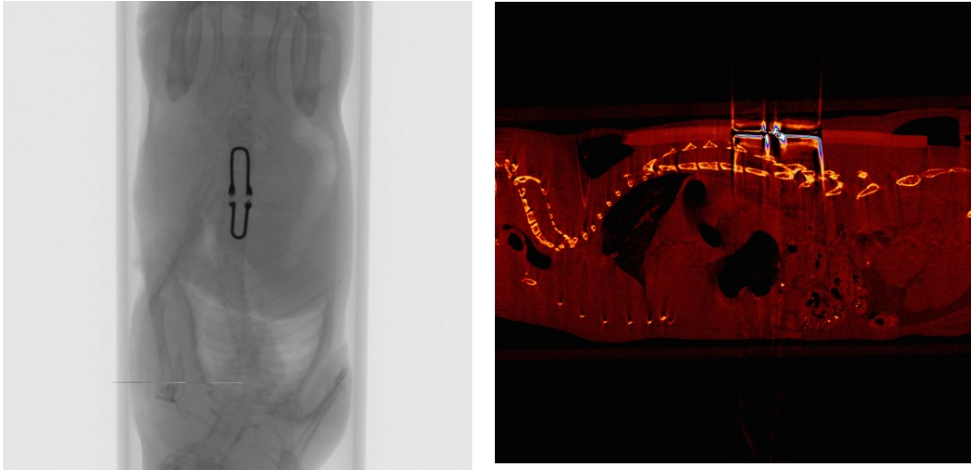


Figure S6. Micro-CT images of *in vivo* implantation of i-WLDD in subcutaneous site of BALB/c mice

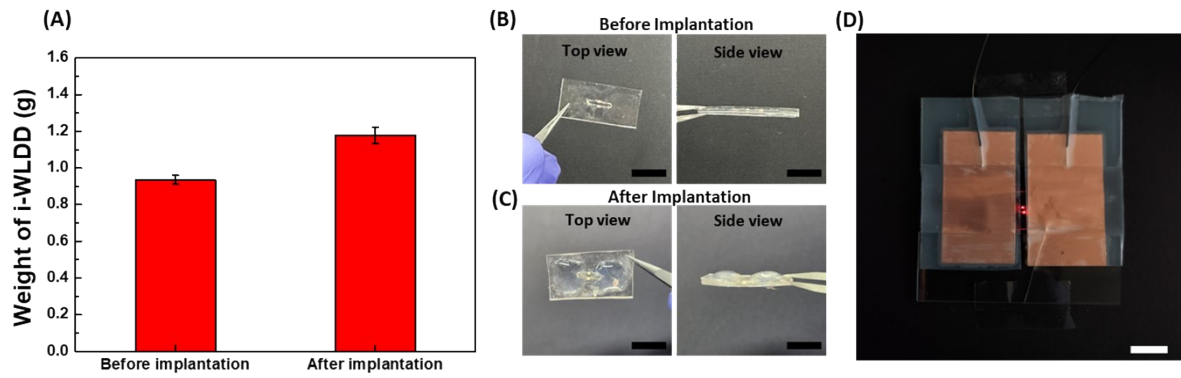


Figure S7. Stability of i-WLDD after implantation *in vivo*: (A) Weight of i-WLDD compared with before and after implantation. (B) Photo of i-WLDD before implantation and (C) photo of i-WLDD after implantation. (D) i-WLDD operation after implantation and *in vivo* PDT treatment

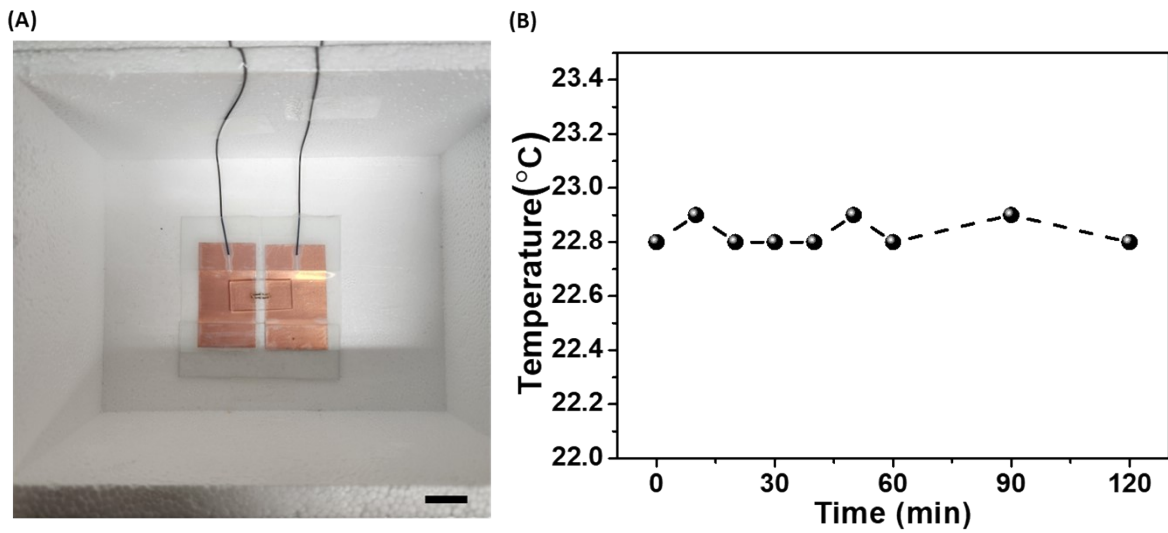


Figure S8. Temperature change of i-WLDD while its operation: (A) Setup for temperature measurement of i-WLDD in the insulated box (scale bar: 2 cm). (B) Temperature graph over 2 hours of i-WLDD operation.

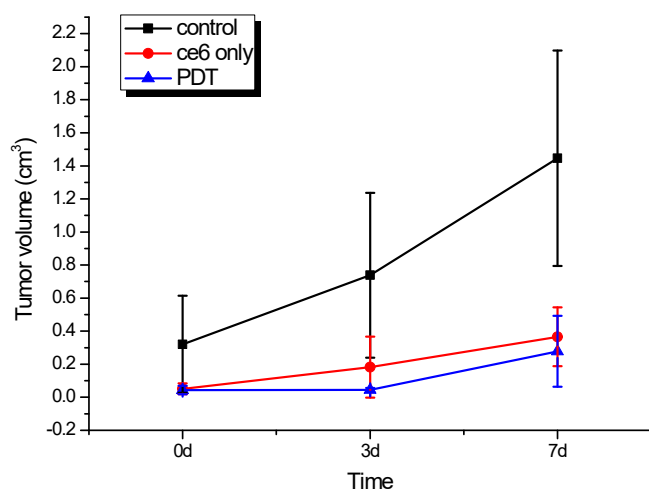


Figure S9. *In vivo* observation of B16F10 tumor tissue after treated by PDT through i-WLDD up to D7 with comparison with control, and ce6 only groups.

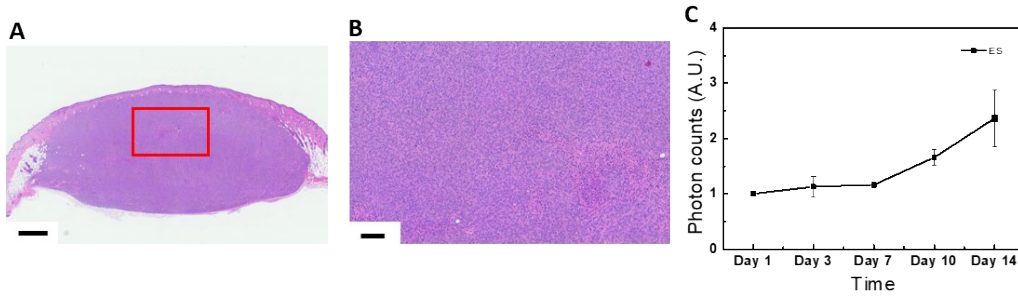


Figure S10. *In vivo* observation of 4T1 tumor tissue after ES at Day 14. (A) H&E image of 4T1 tumor tissue after ES (scale bar 600 μm) and (B) that of high magnification (scale bar 100 μm) (C) photon count graph after ES by bioluminescence imaging

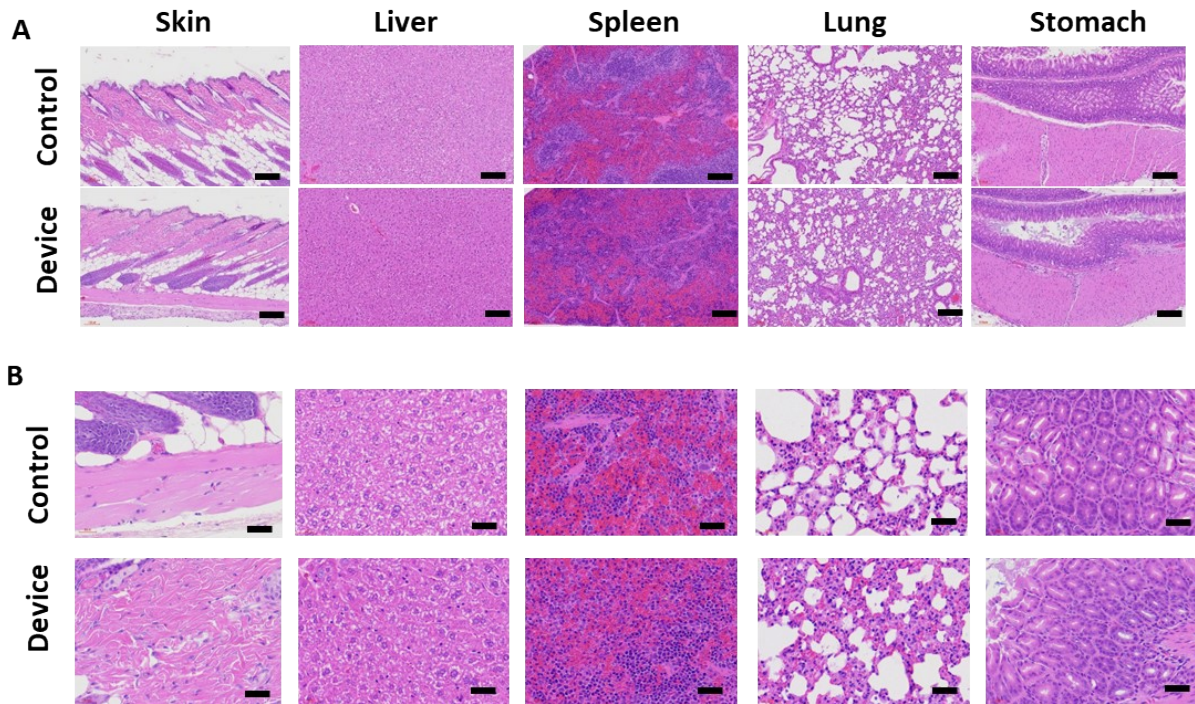


Figure S11. *In vivo* cytotoxicity of i-WLDD implantation by H&E staining analysis of skin, liver, spleen, lung, and stomach after 7 days of i-WLDD implantation in subcutaneous site of BALB/C mice (A) x4 images (scale bar = 500 μ m) and (B) x40 images (scale bar = 50 μ m)

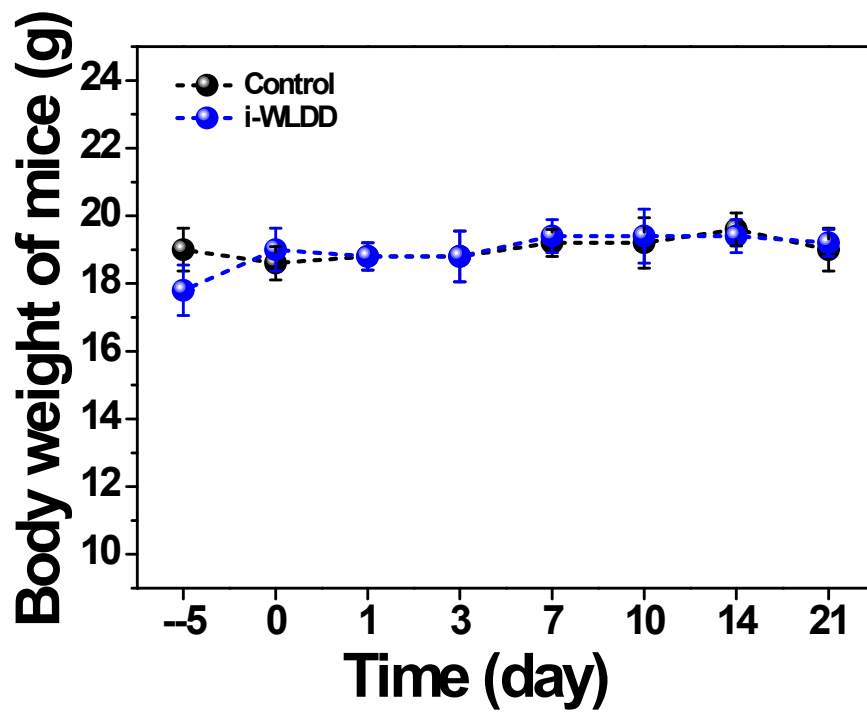


Figure S12. Body weight change of BALB/c mice graph over time: Comparison of body weights between control group and i-WLDD group. PDT was performed 5 days after tumor inoculation, and body weights were measured up to 21 days.