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## Supplementary

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### 4 *Nanoporous platinum needle for cancer tumor destruction by* 5 *EChT and impedance-based intra-therapeutic monitoring*

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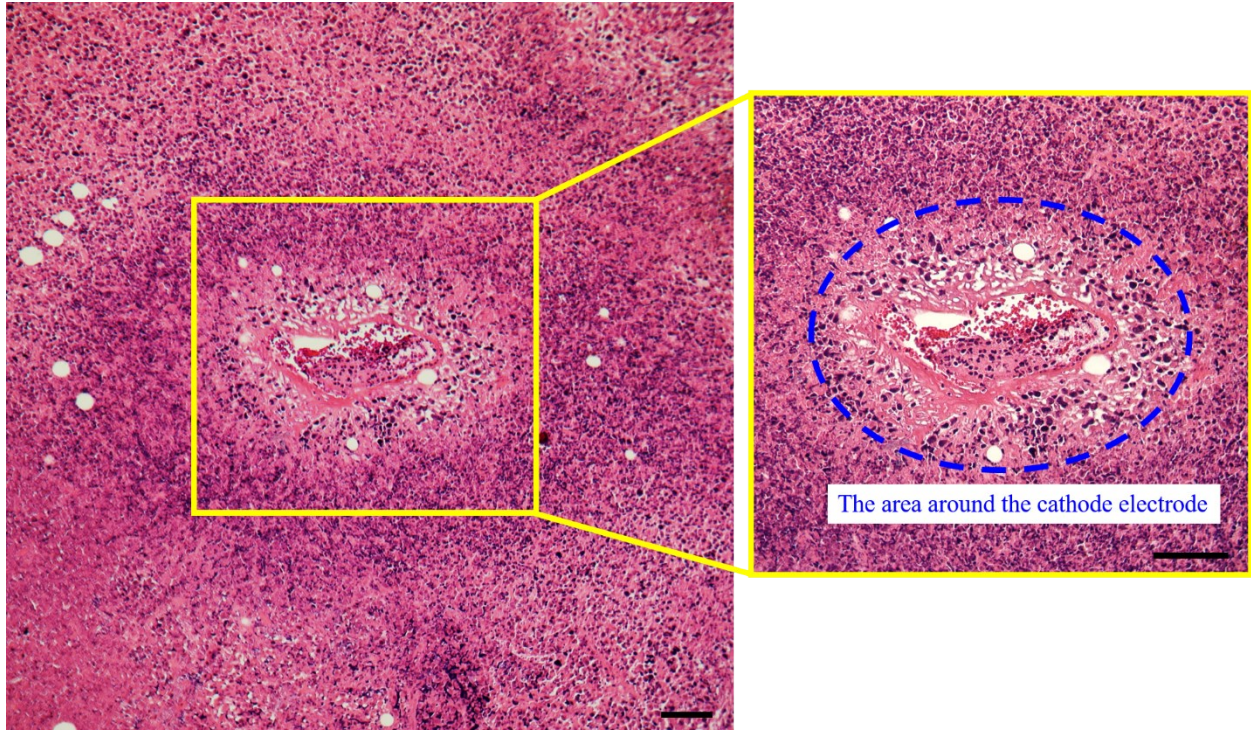
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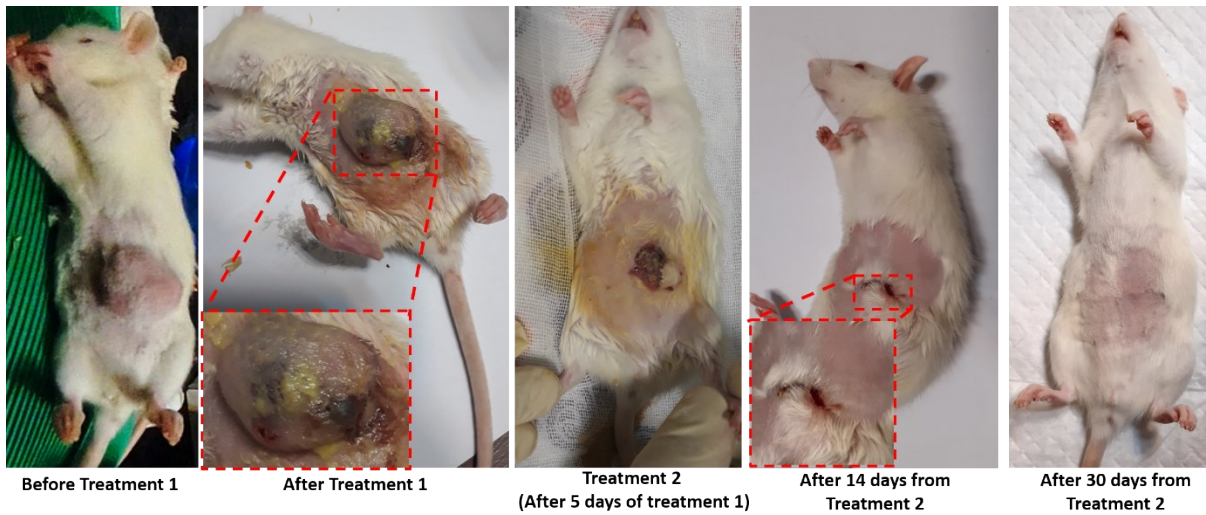
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22 **Sup Figure 1.** The histological images of the injection zone around the cathode electrode after EChT (1.5-2 V, 4  
 23 mA, and 15 min). The colliquative region with swelled connective tissue would be observable.

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26 **Sup Figure 2.** Complete repair of normal skin of rat (ID 30) in adjacent of the breast cancer tumor had been treated  
 27 by EChT after 30 days.

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## 29 S1. Responses of EChT by porous and non-porous Pt needles on the Rats

30 Rat ID 25 and 29 retreated about 5 and 10 days following primary tumor treatments (with a tumor  
31 remaining size 95.8 mm<sup>3</sup>, 5.3 mm<sup>3</sup> and 156.17 mm<sup>3</sup>, 6.53 mm<sup>3</sup> in the second and third treatment  
32 for rat ID 25 and 29, respectively) but they died after the third treatment (Supplementary Figure  
33 3). Rat ID 27 had tumor recurrence after 10 days with a tumor size 45.8 mm<sup>3</sup>, about 10 days after  
34 treatment with a non-porous Pt anode electrode, but its tumor disappeared after 5 days. A rat with  
35 ID 30 (with the largest tumor between all groups with tumor size 2252.9 mm<sup>3</sup>) had two phases of  
36 treatment with a porous Pt anode electrode. After the first treatment, the tumor volume of this rat  
37 had a drastic decrease, but tumor mass with the size 311.32 mm<sup>3</sup> remained up to the second  
38 treatment. Approximately 5 days after the second treatment, the retreated tumor disappeared  
39 (Supplementary Figure 4). The other rats had their first treatment and recovered within 5 days.

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42 **Sup Figure 3.** The ultrasonography images of the treated rat with EChT method (ID29) with three period of treatment,  
43 a) the mass before treatment, b) but after about five days and, c) ten days of the first treatment the tumor remaining  
44 was observed.



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46 **Sup Figure 4.** The ultrasonography images of the treated rat with EChT method (ID30) with two periods of the  
 47 treatment, a) the mass before treatment, b) but after about five, and c) about five days after the second treatment no  
 48 evidence of mass was observed.

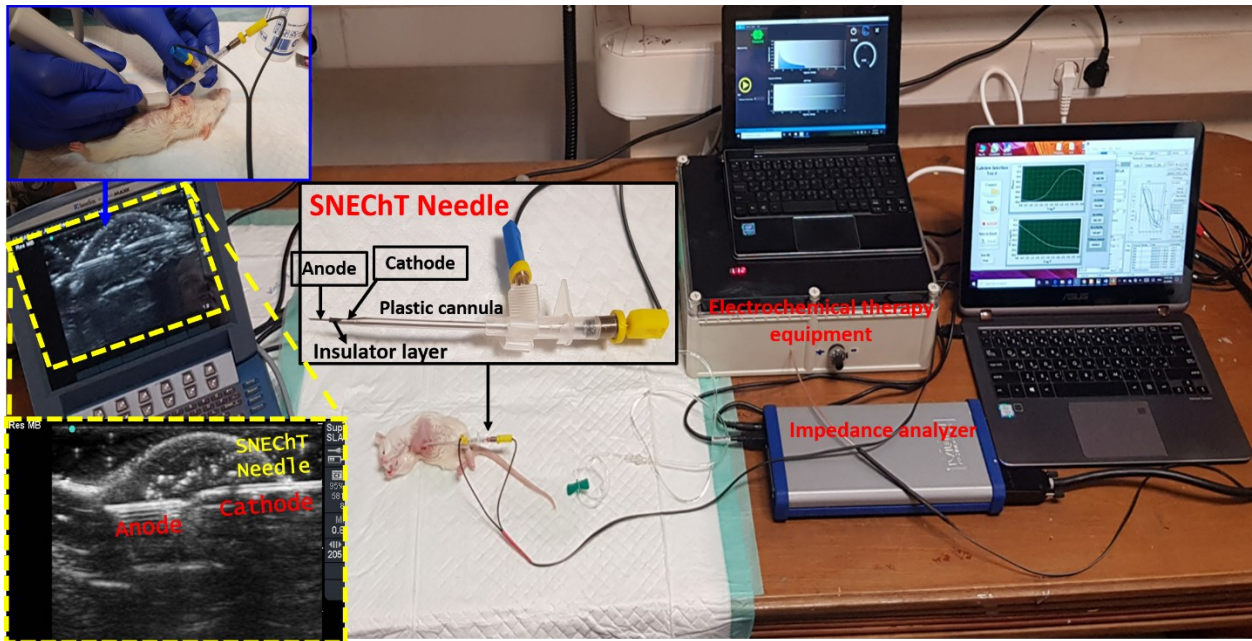
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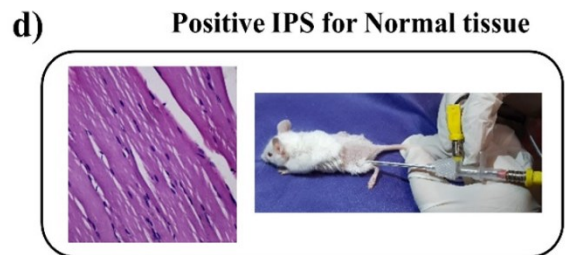
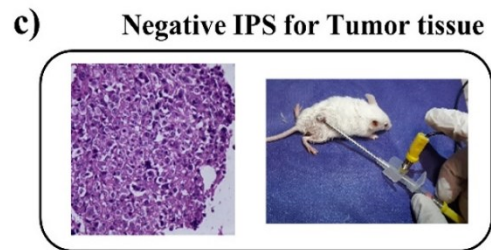
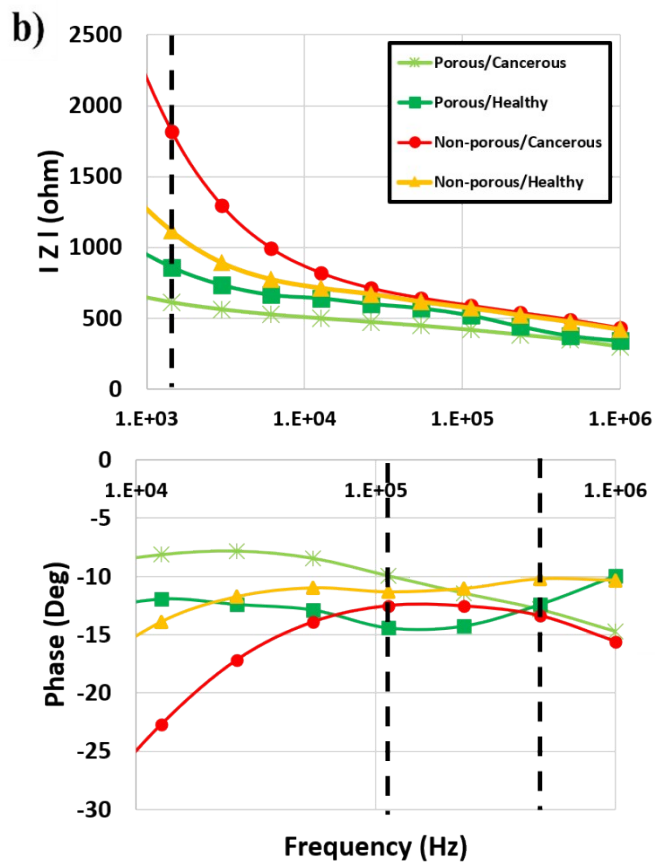
51 **Sup Figure 5.** The ultrasonography images of the treated mice with EChT method, a) the mass before treatment, b)  
 52 but after about five days of the first treatment the tumor remaining was observed, c) about five days after the second  
 53 treatment no evidence of mass was observed.

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Sup Figure 6. The SNEChT test setup



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60 **Sup Figure 7. Mice model test for pre-estimation of impedimetric properties of normal and cancerous tissues.**

61 a) SNEChT structure with non-porous and porous Pt anode electrode were used for impedance measurement during  
62 the EChT, b) Comparison of frequency response of muscular and tumor tissue of mice showing a drastic difference  
63 in slope of phase diagram in the frequency range of 100 kHz to 500 kHz (called IPS), Signaling from c) cancerous,  
64 d) Normal tissue, and the H&E assay of them.

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