Supplementary Materials

Electrothermal Modeling and Analysis of Polypyrrole-Coated Wearable E-Textiles

Resistance Measurements

In the 2-probe method a current is applied to the outer contacts of a rectangular conductive sheet of known width and thickness and the voltage drop is measured between the inner electrodes using the following, Equation (S1):

|  |  |
| --- | --- |
|  | S1 |

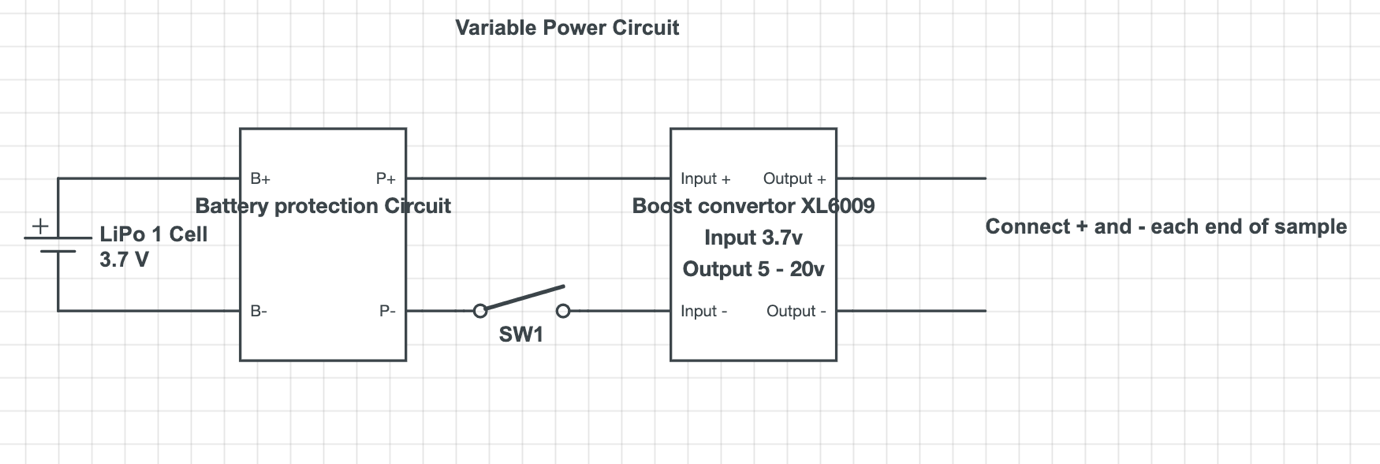
where, σ is the conductivity in S/cm

z is the distance between the inner electrodes in cm

x is the sample width in cm

y is the film thickness in cm

I is the current supplied to the outer electrodes; V is the potential difference measured between the inner electrodes.



**Figure S1.** Schematic of the circuit created for heating analysis.

**Table S1.** Results of AQSA concentration analysis.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sample** | **AQSQ (M)** | **Pyrrole (M)** | **Iron(III) Chloride Hexahydrate (M)** | **Resistance Average (Ohms)** |
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|  |  |  |  |  |
| 6 | 0.125 | 0.05 | 0.05 | 132 |

**Table S2.** Resistance versus ferric chloride concentration.

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| --- | --- | --- | --- | --- |
| **Sample** | **AQSQ (M)** | **Pyrrole (M)** | **Iron(III) Chloride Hexahydrate (M)** | **Resistance Average (Ohms)** |
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**Table S3.** Results of pyrrole concentration analysis.

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| --- | --- | --- | --- | --- |
| **Sample** | **AQSQ (M)** | **Pyrrole (M)** | **Iron(III) Chloride Hexahydrate (M)** | **Resistance Average (Ohms)** |
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