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# Conductivity stability of EMIM-DCA post-treated semi-conducting PEDOT:PSS polymer thin films under elevated temperatures

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Nowadays thermoelectric generators are considered a promising technique for heat waste recovery as they enable a direct conversion of a temperature gradient into electrical power. Nevertheless, so far these devices are made of inorganic semiconducting bulk alloy materials like Bi2Te3, which typically contain rare and toxic elements, and are very difficult and expensive to process. Therefore, an increasing research interest is lying on the development of organic TE materials, as these are normally low or non-toxic, lightweight, flexible and enable a large scale, low-cost solution based processability. However, the more recent organic thermoelectric devices cannot compete with the over years well improved inorganic systems. Hence, in this work we are investigating different treatment methods to improve the thermoelectric properties of conducting polymers and try to find a morphology-function relation by measuring parameters such as Seebeck coefficient, electrical conductivity, absorbance, layer thickness and determination of the structure. Hereby, we are also focusing on the effect of different ambient conditions, like temperature or humidity, on the thermoelectric performance.

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