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**A STUDY OF TENSILE STRENGTH OF PEDOT AND PPy  
CONDUCTING POLYMER FILMS**

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Conducting polymers have been investigated for long time to be used as soft actuators or artificial muscles. Such actuators' performance highly depends on electro-chemo-mechanical properties of these polymers. The present work aims to study the tensile strength of bilayer and trilayer free standing films with PEDOT and PPy polymers. Bilayer (PEDOT/PPy) and tri-layer (PPy/PEDOT/PPy) composite films were electrochemically prepared in galvanostatic mode and the tensile strength measurements on such polymer films were performed using the force-displacement setup. The tensile strength of a trilayer (10  $\mu\text{m}$ / 2  $\mu\text{m}$  / 10  $\mu\text{m}$ ), bilayer (10  $\mu\text{m}$ / 2  $\mu\text{m}$ ) and single PPy (20  $\mu\text{m}$ ) polymer strips seems to be different with the type of the films used. The obtained tensile strengths were 25.5, 24 and 22.5 MPa for the trilayer, bilayer and PPy strips respectively. There was a slight increase in the tensile strength values when PEDOT was combined with PPy as multi-layer films. On the other hand, the maximum strain at fracture is 15 % for these multilayer films, whereas it is about 12 % for a single PPy film.

**Keywords:** Polypyrrole, PEDOT, Actuators, Force Measurements

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