

# ELECTROSPUN CONDUCTIVE MEMBRANES FROM PANI-IONIC LIQUID BLENDS

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The present study was focused on the production of conductive membranes from polyaniline salt - ionic liquid blends by electrosinning. The interest to use PANi as alternative conductive filler is increasing due to the sufficient conductivity of PANi, 1-100 S/cm [1]. Using ionic liquid (IL) will help to overcome the problem of poor solubility of PANi salt in common solvents. Adding IL can maintain the decreased conductivity when insulator polymer is used as a binder in electrospinning process.

PANi concentration from 3 to 40 wt% was used in the blend to study the influence on the electrical and mechanical properties of the electrospun membranes. 10 wt% of ionic liquid (IL), 1-butyl- 3-methylimidazolium chloride ([BMIm]Cl) was added to PANi blend to improve the dispersion of PANi particles in electrospinning solution. It was found that IL in PANi blend significantly affected conductivity and morphology of the membrane. Using IL in the solution increased the conductivity of the material three times, compared with materials without IL. The fibers morphology with diameter decreasing was also improved with adding IL. Increase of PANi concentration affected the mechanical properties. The optimum concentration of PANi salt in blend, from 10 to 12.5 wt%, was found to produce conductive membranes with good mechanical properties. The most conductive membranes show higher tensile stress at maximum load, from 10 MPa to 14 MPa.

## References

1. S. S. Qavamnia, K. Nasouri, 2015, *Polym. Sci. Ser. A*, 57, 343-349.

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