Effects of Reduced Graphene Oxide on Structural, Morphological, and Contact Angle Measurements of Poly (Vinyl Alcohol)/Polyvinyl Pyrrolidone Nanofibers

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**Abstract**. Polymer blend nanofibers are attracting considerable attention due to their wide applications in energy storage, water purification, drug delivery, and wettability studies. To date, research on poly (vinyl alcohol)/polyvinyl pyrrolidone (PVA/PVP) embedded with graphene-related materials like graphene oxide or reduced graphene oxide(rGO) are synthesized from solution mixing and casting into film, with limited efforts on developing polymer blend nanofibrous films. The present study focuses on developing the PVA/PVP blend nanofibrous film embedded with rGO using the electrospinning technique. The X-ray Diffraction (XRD), Field Emission scanning electron microscopy (FESEM), and contact angle measurements are used to investigate the structural, morphological, and wettability of the synthesized nanofibrous film. The rGO is synthesized by the improved Hummer’s method. The study provides insights into the tuning of the contact angles by modifying the morphology of nanofibers. The as-synthesized nanofibers have a diameter of about 150-250 nm and with the increase in rGO weight percentage show a drastic change in contact angle from 64° to 35.2°. These results highlight the modification of the wettability properties of blend nanofiber films by embedding rGO.

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