

## Investigation of the Effect of Phosphorous on the Flame Retardant Polyacrylonitrile Nanofiber

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**Abstract :** Commercially available poly(acrylonitrile-co-vinyl acetate) P(AN-VA) or poly(acrylonitrile-co-methyl acrylate) P(AN-MA) are not satisfactory to meet the demand in flame and fire-resistance. In this work, vinylphosphonic acid is used during polymerization of acrylonitrile, vinyl acetate, methacrylic acid to produce fire-retardant polymers. These phosphorus containing polymers are successfully spun in the form of nanofibers. Properties such as water absorption of polymers are also determined and compared with commercial polymers.

**Keywords :** flame retardant, nanofiber, polyacrylonitrile, phosphorous compound, membrane

**Conference Title :** ICFRPA 2018 : International Conference on Flame-Retardant Polymers and their Applications

**Conference Location :** Dublin, Ireland

**Conference Dates :** December 20-21, 2018