

## Synthesis of Electroactive Nano-Polymers and Nano-Composites on the polyaniline base "Mechanical properties, Electric conductivity and Thermal Stability Study"

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### Abstract

**Introduction :** The initial spark of nanotechnology goes about half century. There is a lot of space in the low levels. Molecules and atoms are subject to change and new behaviors are expected of them. Nano polymers and nano composites are a part of nano materials. They are especially important because many applications have. Conductive polymers such as polyaniline have interesting properties, conductivity, optically and electro activity. Numerous applications of this nano polymers and its composites can be visitor including electronics, sensors, protections of electrodes, absorption and transfer of heavy metals and removal of organic dye from solutions. Polyaniline protonated state has a good conductivity, but poor mechanical properties. The production of composite by polyaniline and polyamide polymers such as insulation, and using the common solvent can be added to its mechanical properties.

**Aim :** Synthesis of polyaniline and nano conductive polymer composite with the insulating polymer to increase mechanical properties, and study of electrical properties, thermal of Pan/Ny66 .

**Materials and Methods :** At this stage, polyaniline synthesis by oxidation with ammonium persulfate. The electrical properties of Pan/Ny66 nano composite were analyzed by 4-point probe technique. UV-Vis Spectroscopy was used for thermal stability study. The tensile strength test was used to evaluate the mechanical and stability properties. Surface morphology changes were evaluated by scanning electron micrograph (SEM) before and after the production of composite.

**Results :** Polyaniline proces due to poor mechanical properties and low strength of its disadvantages is considered. There is no study thermal stability and electrical conductivity under such conditions. Using formic acid as a common solvent for polyaniline and nylon66 , Pan/Ny66 will provide by casting method. 1 to 2 ratio of polyaniline to nylon66, is sealed. The thermal stability is high by composite production. Electrical conductivity increases in the Pan/Ny66 composite.

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**Conclusion :** Casting method is used for the preparation of nano composite films. Using this method, increased on mechanical properties, thermal stability and electrical conductivity.

**Keywords :** Nano conducting polymer, Polyaniline, Electrical conductivity, Nano electroactive composite, Nylon66