

Structural Characterization of Fe₃O₄ Nanoparticle Embedded Polypyrrole-FeCl₃ Composite

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Abstract: *The conducting polymer composites have generated lot of scientific interest and led to active multi-disciplinary research because of their excellent potential for technological applications. Among the conducting polymers, Polypyrrole (PPY) and its composites have attracted considerable attention because they are easily synthesized. There are many approaches in the enhancement of the mechanical strength, chemical stability and gas-sensing properties by combining PPY with organic and inorganic materials to form composites. The composite of the various combinations of ratios the Pyrrole to FeCl₃ with the Fe₃O₄ nano particles. The composite prepared in the form of powder. The powder of composite is prepared through Chemical polymerization method. The sample preparation starts from distillation of Pyrrole with various combination of Pyrrole to FeCl₃ are stirred for overnight. The distillation of Pyrrole for purification of Pyrrole, we have designed the Portable Distillation Set up which 100% save the wastage of water used for the cooling of vapor in Condenser. Also the Fe₃O₄ nano particles are added for the blending purpose. The solution is then processed in centrifugal machine and filtered to separate the composite particles from the solution. The powder is dried in the furnace at warm temperature. Also the composite is exposed to room temperature for sufficient time. The dried powder sample is analyzed through XRD.*

Keywords: PPY, XRD

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