Abstract

Cobalt oxide (Co3O4) and nickel oxide (NiO) nanoparticles were prepared by the simple approach of sol–gel process using starch as a capping agent and cobalt chloride and nickel carbonate as precursor. Conducting polyaniline-cobalt oxide (PANI/Co3O4) nanocomposites and polyaniline-nickel oxide (PANI/NiO) nanocomposites were synthesized by in-situ polymerization technique in sulphuric acid medium with ammonium persulphate as oxidizing
agent in the presence synthesized nanoparticles of Co3O4 and NiO as reinforcing filler in different concentrations so as to study the effect of filler nanoparticles on magnetic behavior of the conducting polyaniline. The synthesized nanocomposites were characterized by XRD, TEM and VSM analysis. The X-ray diffraction (XRD) pattern and transmission electron microscopy (TEM) image shows that nanocrystalline Co3O4 and NiO embedded into polycrystalline PANI to form crystalline nanocomposites. VSM study shows that the synthesized NiO and Co3O4 are ferromagnetic whereas PANI is paramagnetic. The area of hysteresis loop of the nanocomposites increases with the weight percentage of Co3O4/NiO content in polymer matrix.

References

Magnetic Properties of Nanostructured Cobalt and Nickel Oxide Reinforced Polyaniline Composites

27334.
- Bourdo S, Li Z, Biris AS, Watanabe F, Viswanathan T, Pavel I "Structural, Electrical
Magnetic Properties of Nanostructured Cobalt and Nickel Oxide Reinforced Polyaniline Composites


**Index Terms**

Computer Science

Nanoparticles
Keywords
Conducting Polymers  Polyaniline  Nanostructured Cobalt Oxide  Nickel Oxide
Nanocomposites
Vsm