**Fabrication and Characterization of Ni-Carbon nanofibers by Electrospinning Technique**

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**Abstract:**

Carbon nanofibers with the distribution of magnetic Ni metal (Ni-CNFs) have been synthesized using Nickel (II) acetate tetrahydrate (Ni (OCHCH3)2.4H2O), polyacrylonitrile (PAN) as precursors by electrospinning technique. The as-prepared nanofibers were dried in a vacuum oven, stabilized, and followed by carbonization at 850 °C in N2 atmosphere. Their structural phase composition, microstructure, and magnetic properties have been studied. The X-ray diffraction (XRD) pattern confirms the formation of pure Ni-CNF phases without any impurity. The average diameter of the nanofibers and the Ni nanoparticles has been calculated to be 159±25.72 nm and 67±11.24 nm respectively. The presence of the elements Ni and C has been confirmed by energy-dispersive x-ray spectroscopy (EDX) measurement. Raman spectrum attributes the presence of two characteristic absorption peaks of carbon materials. Room temperature (300 K) magnetic measurement shows the ferromagnetic behavior of Ni-CNF. These nanofibers have the potential to be used as soft magnetic materials, magnetic sensors, and magnetic recording devices, etc.

**Keywords:** Ni-CNF,Electrospinning, XRD, Morphology, Ferromagnetic properties

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