Cobalt spinel ferrite (CoFe$_2$O$_4$) nanoparticles have high magnetocrystalline anisotropy, moderate room temperature saturation magnetization and coercivity. Hence it is a promising candidate for many potential applications for example magnetic recording media, ferrofluids, magnetic resonance imaging, etc. Among various processing methods, co-precipitation route has advantages in control over the physical properties such as uniform particle size distribution and morphology. Thus co-precipitation method was adopted to prepare cobalt ferrite nanoparticles at different reaction temperatures (30, 40, 60 and 80 °C). The synthesized cobalt ferrite nanoparticles were characterized through XRD, SEM, TEM, TGA and VSM techniques to study the effect of temperature on phase purity, particle size, crystal structure, morphology, thermal and magnetic properties. From the investigation it was observed that the reaction temperature significantly influenced the particle size and morphology. It was also observed that the saturation magnetization increased with particle size and was found to be superparamagnetic in nature.

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**Keywords:** Co-precipitation, Cobalt ferrite, Magnetic properties

**Presenting author’s email:** prabhakarant85@gmail.com