

Synthesis and optical characterization of Co nanoparticles dispersed on polymer matrix by gamma radiation.

ABSTRACT

Cobalt nanoparticles were synthesized using reduction of ^{60}Co gamma source with dose range 10-50 kGy in the presence of polyvinyl alcohol (PVA) polymer as a capping agent. Radiation synthesis has the advantages of without the use of reducing agent and catalyst and the cobalt nanoparticles aggregated immediately upon irradiation. The Ultraviolet-visible spectrophotometer and Nanophox measurement revealed the formation of cobalt nanoparticles by exhibiting surface plasmon absorption maxima at 500 nm. The size distribution of the cobalt nanoparticles was influenced by the concentration of CoCl_2 and absorbed dose of gamma rays irradiation.

Keyword: Co; Nanoparticles.