## Synthesis, Characterisation and Study of thermal Properties of Polyaniline Composite with Transition Metal Complex of Cobalt(III)

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**Abstract**—The work presented reports the synthesis of PANI composite with hexaaminecobalt(III) chloride ( $[Co(NH_3)_6]$  Cl<sub>3</sub>) metal complex as dopant via in situ oxidative polymerisation by ammonium persulphate in non-aqueous DMSO medium. The dopant metal complex has been synthesised by known literature method and characterised by using FTIR, XRD and SEM analysis. The synthesised PANI/  $[Co(NH_3)_6]$  Cl<sub>3</sub> composite was characterised by UV-Vis, FTIR, XRD, and SEM techniques. FTIR of PANI composite showed its successful synthesis with the presence of some dopant peaks in its FTIR spectrum.XRD spectra of composite revealed its crystalline nature having almost same spectra as that of dopant metal complex with slight shift in the position of peaks. Thermal study has been carried out on TG, which shows improvement in the thermal stability of composite of PANI with transition metal complex as a good percentage of composite remains as residue even at 800<sup>o</sup>C. The composite is under study for electrical characteristics.