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Tuning of the physical properties by various transition metal doping in  $\text{Co}_3\text{O}_4$ : TM (TM= Ni, Mn, Cu) thin films: A comparative study

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**Highlights:**

- Transition Metal (TM=Ni,Cu, Mn)-doped  $\text{Co}_3\text{O}_4$  thin films have been synthesized by sol gel dip-coating process.
- Optical properties of TM-doped  $\text{Co}_3\text{O}_4$  have been studied.
- Structural and vibrational properties of TM-doped  $\text{Co}_3\text{O}_4$  have been studies.

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