



## Quantitative Analysis of the Co-ordination Nature of the Synthesized Praseodymium(III) Isonicotinic acid Nanomaterial: Characterization and Study of Antimicrobial Properties

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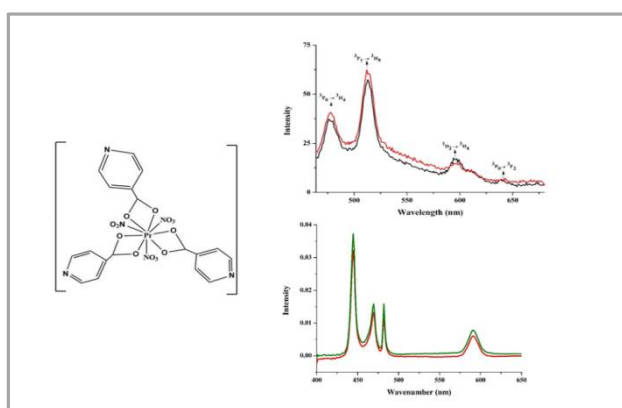
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### ABSTRACT

*Praseodymium (III): isonicotinic acid nano crystal was successfully synthesized through a simple technique and characterized by elemental analysis, molar conductance, FT-IR, X-ray powder diffraction, fluorescence, UV-Vis spectroscopy and the thermogravimetric studies. The evaluated Energy interaction and Judd Ofelt Intensity parameters from the UV-Vis spectra of the synthesized nano crystal could suggest the mode of co-ordination of Pr(III) with isonicotinic acid. Further, therein vitro antimicrobial properties were also studied. The isonicotinic acid ligand is composed of carbonyl oxygen atom and nitrogen atom of the pyridine ring as potential donor sites. Deprotonation of the ligand sites enabled metal-ligand coordination, and as a result, isonicotinic acid behaves as a bidentate ligand. A coordination number of nine was assigned to the praseodymium (III) ion in this nano crystal with monoclinic structure. The nanomaterial was found to be thermally stable and shows good photochemical and antimicrobial properties.*

### Graphical Abstract:



Synthesis, Characterization, and Functional Properties of Praseodymium(III): Isonicotinic Acid Nano Crystal with Enhanced Antimicrobial and Photochemical Attributes

**Keywords:** Pyridine, Praseodymium(III) nitrate hexahydrate, Antimicrobial activity.