ABSTRACT

Four mononuclear cobalt (II) complexes of substituted hydrazino quinoline [Schiff bases](https://www.sciencedirect.com/topics/materials-science/schiff-base) **1(a–d)** were synthesised and characterized by UV, IR, NMR and [TGA](https://www.sciencedirect.com/topics/materials-science/thermogravimetric-analysis) studies. The geometry of cobalt complexes **1(a–d)** unambiguously attested as distorted octahedral’ and the ligand was coordinated through NNO donor fashion of tridentate nature. Structure of the proposed complexes were optimized using Density Functional theory (DFT) with Gaussian 09/ Gauss view software. Mulliken charges, global softness and electrophilicity index were derived for the optimized structure and the energy of highest occupied orbital (HOMO) and lowest unoccupied orbital (LUMO) and energy gap were calculated. The photophysical properties of the synthesised complexes were analyzed by UV–Visible and [photoluminescence](https://www.sciencedirect.com/topics/materials-science/photoluminescence) spectral studies, the results revealed that the emission bands centered in the range of 445–455 nm with higher luminescence intensity and relatively large Stoke’s shift observed (198 nm–215 nm) in the absorption and emission shoed a promising [novel material](https://www.sciencedirect.com/topics/materials-science/novel-material) towards OLED’S.