

**Synthesis, characterization and DNA binding studies of [Ruthenium(II)(bpy)₂L]₂₊
where L are derivatives of imidazo[4,5-f]-1,10-phenanthrolines**

ABSTRACT

Three novel ruthenium(II) complexes of the general formula [Ru(II)(bpy)₂L]₂₊ were synthesized, where L = 1,10-phenanthroline derivatives of position 2 imidazole having 3,4-didecyloxy-phenyl (ddip), 3,4-ditetradecyloxy-phenyl (dtip) and 3,4-dihexadecyloxy-phenyl (dhip). All complexes were characterized by elemental analysis, ¹H-NMR and ESI-MS. Their photophysical properties have also been studied by UV-visible spectroscopy and fluorescence spectroscopy. The complexes exhibit Ru(II) metal centered emission at approximately 610 nm in acetonitrile solution at room temperature. DNA binding studies were carried out by UV-visible titration, luminescence titration and viscosity studies. The results indicated that [Ru(bpy)₂(ddip)]₂₊ binds to CT-DNA by partial intercalation mode, while [Ru(bpy)₂(dtip)]₂₊ and [Ru(bpy)₂(dhip)]₂₊ bind intercalatively via extended ligands.

Keyword: DNA binding; Polypyridyl ligand; Ruthenium(II) complex; Transition metal complexes