

A novel Ru^{II} complex containing a hybrid coumarin derivative: synthesis, characterization and crystal structure

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Ruthenium complexes are believed to have great potential as alternative drugs to cisplatin in view of their low toxicity and good selectivity for solid tumor metastasis¹. The successful of preclinical tests and clinical trials of NAMI-A has promoted the investigation on the synthesis of similar compounds containing ligands with hard donor sets such as O,O and O,N^{2,3}. This work describes the synthesis and characterization of a new Ru^{II} complex (P3N1) containing a hybrid coumarin derivative (N1). The Ru^{II} compound has been prepared from a solution of the respective ligand in ethanol and the precursor *cis*-[Ru(DMSO)₄Cl₂] in 20% excess in its solid form, Fig. 1.

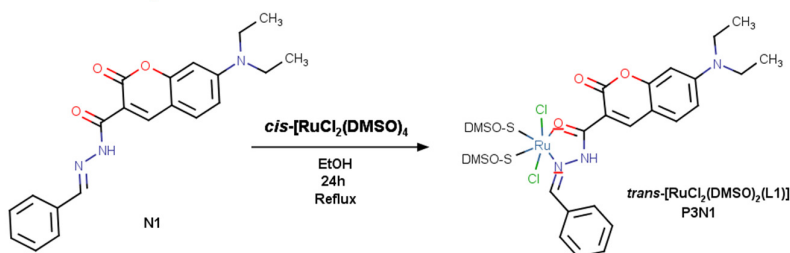


Fig. 1: Synthesis of P3L1 complex.

The P3N1 has been characterized by IR spectroscopy (data not shown) and X-ray diffraction analysis. The complex has the neutral ligand coordinated in a bidentate mode to the metal. The Ru^{II} ion is in a distorted octahedral environment equatorially coordinated by an ON chelate of the hydrazone ligand and two sulfur atoms of the DMSO ligands at *cis* positions. A pair of chlorine atoms at the axial positions completes the coordination sphere, Fig. 2. Other analysis of the P3L1, such as ¹H NMR and elemental analysis are underway.

Table 1: Cell parameters of the P3N1crystal

Space group	P-1
Cristal system	orthorhombic
Cell lenghts (Å)	a = 9.936(2), b = 15.466(3) c = 20.962(4).
Cell angles (°)	α = 94.006(7), β = 99.739(7) γ = 90.819(7).

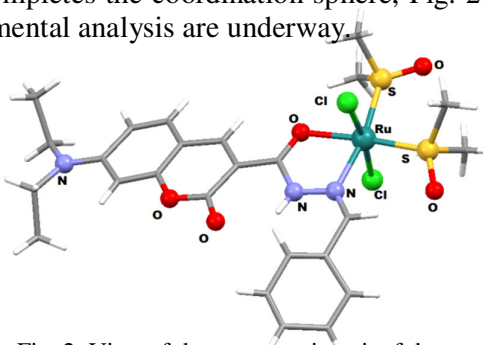


Fig. 2: View of the asymmetric unit of the *trans*(Cl)-[RuCl₂(DMSO)₂(N1)].

1. Mahalingam, V.; Chitrapriya, N.; Fronczek, F. R.; Natarajan, K. *Polyhedron*, **2008**, 27, 1917.
 2. Trondl, R.; Heffeter, P.; Kowol, C. R.; Jakupec, M. A.; Berger, W.; Keppler, B. K. *Chem. Sci.*, **2014**, 5, 2925
- UFRRJ, PPGQ, CAPES, LDRX-UFF