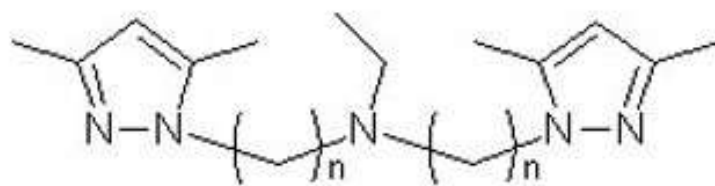


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## New study of the coordination of pyrazole ligands to Pt(II)



Using several analytical and spectroscopic technologies, the structure of diverse complexes of Pt(II) with pyrazole ligands has been determined. The results of these structural analyses have been obtained from a series of NMR studies of  $^1\text{H}$ ,  $^{13}\text{C}\{^1\text{H}\}$  and  $^{195}\text{Pt}\{^1\text{H}\}$ , giving one more step in the progress of Chemistry of Coordination

Coordination chemistry of pyrazole ligands has been widely developed during the last years. The bonding properties of a more specific family of pyrazole-amine derivatives are well documented thus furnishing metal complexes of varying coordination geometries and nuclearity.

In our group, we have synthesised new Rh(I) and Pd(II) complexes containing N-alkylaminopyrazole bidentate-NN' and tridentate-NN'N ligands (Figure 1). Previously, Driessen et al. synthesised and characterised several bi-NN' and tri-NN'N alkylaminopyrazole ligands, which contain two different nitrogen donor centres, and studied their reactivity with Cu(II), Ni(II), Co(II), and Zn(II). In 2003, Calderazzo et al. described the synthesis and characterisation of the complexes  $[\text{FeX}_2(\text{NN}'\text{N})]$  (X = Cl, I), and recently Carpentier et al. investigated the reactions of Al(III) and Zn(II) with tri-NN'N ligands

*Figure 2. Diffraction of X-rays in monocystal*

In this paper, we show the reaction of the N-alkylaminopyrazole (NN') and (NN'N) ligands with  $[\text{PtCl}_2(\text{CH}_3\text{CN})_2]$ . We have obtained a series of square-planar Pt(II) complexes with formula  $[\text{PtCl}_2(\text{NN}')]_2$ ,  $[\text{PtCl}_2(\text{NN}'\text{N})]$  and  $[\text{PtCl}(\text{NN}'\text{N})]\text{Cl}$ . Treatment of complex  $[\text{PtCl}(\text{NN}'\text{N})]\text{Cl}$  with  $\text{AgBF}_4$  in  $\text{CH}_2\text{Cl}_2$ /methanol gives  $[\text{PtCl}(\text{NN}'\text{N})(\text{BF}_4)]$  complex. These Pt(II) complexes have been characterised by elemental analyses, conductivity measurements, and IR,  $^1\text{H}$ ,  $^{13}\text{C}\{^1\text{H}\}$  and  $^{195}\text{Pt}\{^1\text{H}\}$  NMR spectroscopies. The  $^1\text{H}$  NMR studies of the complexes prove the rigid conformation of the ligands when they are complexed. The solid-state structure of a complex with formula  $[\text{PtCl}_2(\text{NN}')]_2$  was determined by single crystal X-ray diffraction methods

(Figure 2). The ligand NN' is coordinated through the Npz and Namino atoms to the metallic centre and this ion completes its coordination with two chlorine atoms in a *cis* disposition.

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## References

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