# SYNTHESIS AND CHARACTERIZATION OF AZIDO Zn(II) COMPLEX WITH THE CONDENSATION PRODUCT OF 2-ACETYLPYRIDINE AND GIRARD'S P REAGENT

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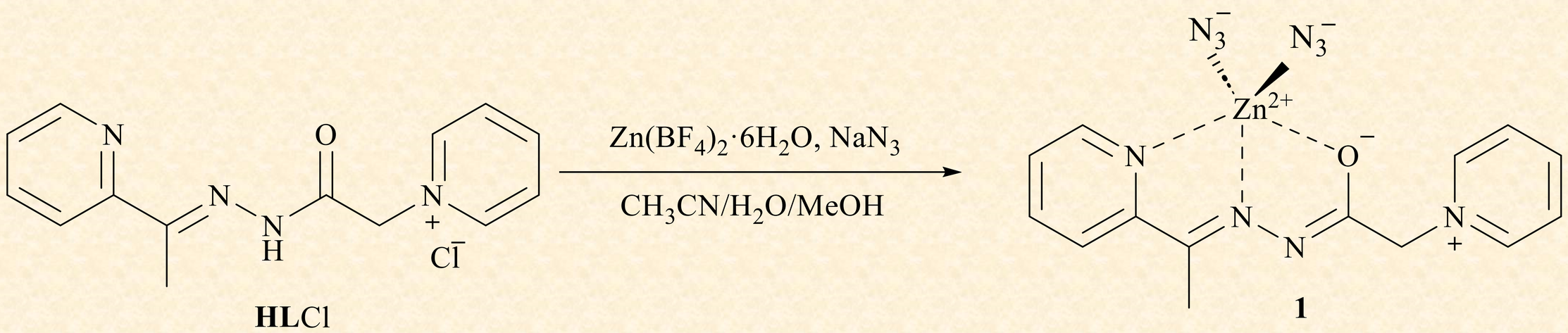
Hydrazone ligands are one of the most important classes of flexible and versatile polydentate ligands which show very high eciency in chelating various metal ions. Deprotonation of the –NH group, which is readily achieved in the complexed ligand in particular, results in the formation of tautomeric anionic species (=N–N–C=O or =N–N=C–O), having diferent coordination properties. Our interest in metal complexes with hydrazone-based ligands is partly due to their potential applications as catalysts and molecular magnets.

In the reaction of **HL**Cl with $Zn(BF_4)_2 \cdot 6H_2O$ and $NaN_3$ in molar ratio 1 : 1 : 4 in acetonitrile/water/methanol mixture of solvents, an mononuclear Zn(II) complex (**1**) was obtained, with composition [Zn**L**$(N_3)_2$] (Scheme 1).




**Scheme 1.** Synthesis of [Zn**L**$(N_3)_2$] complex (**1**).

In complex **1**, the ligand is coordinated in deprotonated, formally neutral, zwitterionic form to Zn(II) ion through the pyridine nitrogen, the imine nitrogen, and the carbonyl oxygen atoms, forming a pentacoordinated complex (Figure 1).

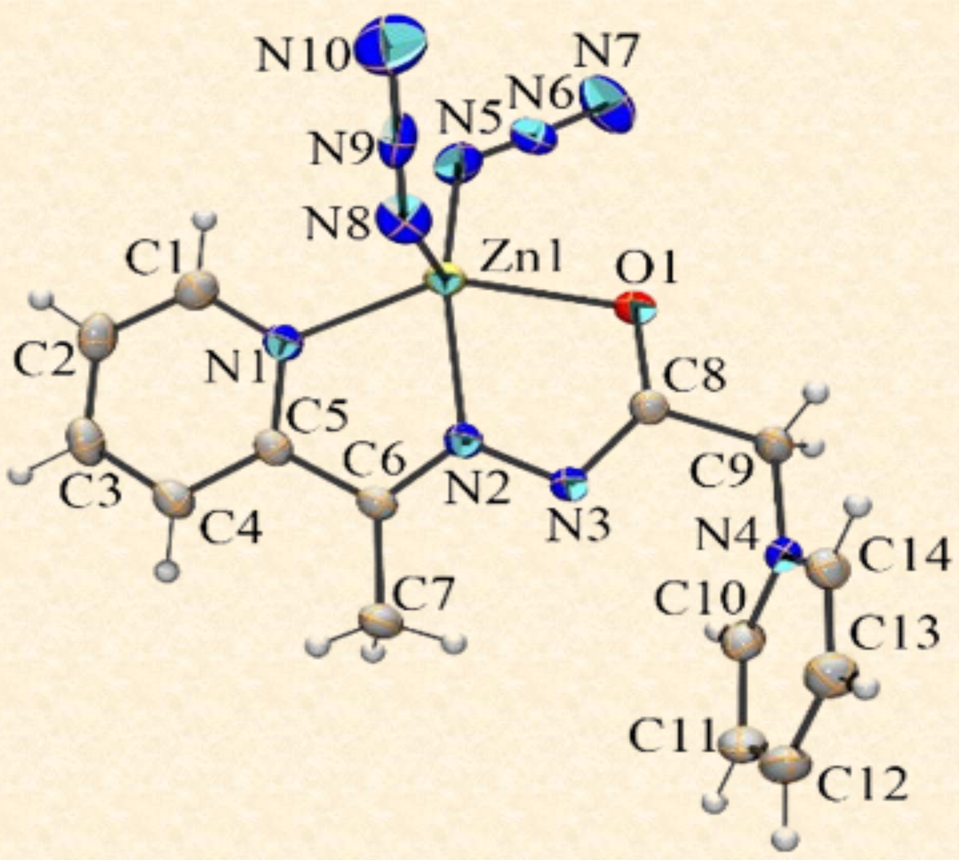



**Figure 1.** ORTEP representation of the [Zn**L**$(N_3)_2$] (**1**) complex. Thermal ellipsoids are drawn at the 30% probability level.

**Table 4.** Crystal data and structure refinement details for **1**.

| | **1** |
|---|---|
| formula | $C_{14}H_{14}N_{10}OZn$ |
| Fw (g mol$^{-1}$) | 403.72 |
| crystal size (mm) | 0.50×0.10×0.10 |
| crystal color | colourless |
| crystal system | monoclinic |
| space group | *P* $2_1/c$ |
| *a* (Å) | 12.3417(5) |
| *b* (Å) | 8.9990(5) |
| *c* (Å) | 15.3451(6) |
| *β* (º) | 101.169(4) |
| *V* (Å$^3$) | 1671.99(13) |
| *Z* | 4 |
| calcd density (g cm$^{-3}$) | 1.604 |
| *F*(000) | 824 |
| no. of collected reflns | 15739 |
| no. of independent reflns | 3828 |
| $R_{int}$ | 0.0320 |
| no. of reflns observed | 3007 |
| no. parameters | 236 |
| $R[I > 2\sigma(I)]^a$ | 0.0331 |
| $wR_2$(all data)$^b$ | 0.0823 |
| Goof, $S^c$ | 1.052 |
| maximum/minimum residual electron density (e Å$^{-3}$) | +0.38/–0.30 |

$^aR = \sum||F_o| - |F_c||/\sum|F_o|$. $^bwR_2 = \{\sum[w(F_o^2 - F_c^2)^2]/\sum[w(F_o^2)^2]\}^{1/2}$.
$^cS = \{\sum[(F_o^2 - F_c^2)^2]/(n/p)\}^{1/2}$ where $n$ is the number of reflections and $p$ is the total number of parameters refined.

***Acknowledgment:*** This research was supported by the Science Fund of the Republic of Serbia, #7750288, Tailoring Molecular Magnets and Catalysts Based on Transition Metal Complexes – ***TMMagCat.***