# Influence of the bridging tetrazole containing ligands on magnetic properties of 3*d* metal complexes.

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Considerable current interest is focused on the design and preparation of molecular-based magnetic materials because of their great value in investigation of magnetostructural relationships and some fundamentally magnetic behaviors. Herein, the results of variable-temperature magnetic susceptibility measurements of novel series of structurally characterized 5-R-tetrazolato- ($RCN_4$, where R = H, Ph, 4-Py [4-pyridyl]) and 5-R'-1(2)-methyltetrzole-bridged ($R'CN_4$-1(2)-Me, where R' = $NH_2$, Me) 3*d* metal complexes were performed. It was found, that in copper(II) complexes, namely $[Cu(HCN_4)_2(en)]_n$, $[CuZn(HCN_4)_4(en)_2]_n$, $Cu_2(PhCN_4)_4(en)_2 \cdot 2DMSO$, $\{[Cu(4\text{-}PyCN_4)_2(DMSO)_2] \cdot 4DMSO\}_n$, $[Cu(CH_3CN_4\text{-}1\text{-}Me)Cl_2]_n$ and $[Cu(NH_2CN_4\text{-}2\text{-}Me)_2Cl_2]_n$, the coupling between paramagnetic centers through the bridging tetrazole containing ligands is always antiferromagnetic, but the exchange coupling strength is different due to varied linking modes of tetrazole containing ligands. Replacement of Cu(II) centers in complex with composition of $[M(CH_3CN_4\text{-}1\text{-}Me)Cl_2]_n$ by anisotropic Co(II) ions yields the ferromagnetic ordering of the system $[Co(MeCN_4\text{-}1\text{-}Me)Cl_2]_n$ *via* chlorido and tetrazole bridges.