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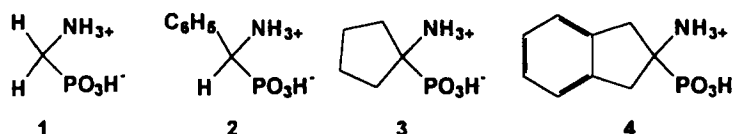
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Magnetic Properties of Coordination Compounds of 1-Aminoalkylphosphonic Acids with Cobalt(II)

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The studies were undertaken to determine whether there exists a trend in the magnetic spectral properties, characterizing a series of complexes containing related ligand molecules from labile to rigid molecular structures. Ligands selected for our investigation have following structures: aminomethylphosphonic acid (1,



AMP), 1-aminobenzylphosphonic acid (2, ABP), 1-aminocyclopentyl-1-phosphonic acid (3, ACP) and 2-aminoindan-2-phosphonic acid (4, AIP). By using these ligands, new complexes of cobalt (II) have been prepared and characterized by the IR, FIR, UV-VIS spectra [1, 2] and magnetic susceptibilities.

The magnetic susceptibilities of four related, six coordinate polycrystalline cobalt (II) compounds, have been determined between 293-4 K at different field strengths. One of this, Na₂[Co(AMP)₂(H₂O)₂], shows the normal Curie-Weiss behaviour at the different field strengths and effective magnetic moment is within the range expected for a normal octahedral cobalt (II) complex.

For the next compounds the magnetic susceptibilities are dependent on magnetic field strength and show, antiferromagnetic effects at low temperatures: for Co[(ABP)(H₂O)₂] at 30 kOe and for Co[(ACP)(H₂O)₂] and Co[(AIP)(H₂O)₃]2H₂O at 10 kOe. Those complexes exhibit anomalous Curie-Weiss behaviour which as we suggest indicates for equilibrium mixture of high and low spin complexes (⁴T₁ <---> ²E). Further, it is significant that the complexes are presumed to have the greater low spin character contain coplanar rigid ligand which produces large ligand field.

References

- [1] M. Kucharska-Zoń, and J. Zoń, *Phosphorus, Sulfur and Silicon* **111**, 46(1996).
- [2] M. Kucharska-Zoń, J. Zoń and W. Wojciechowski. *Proceeding of Annual Meeting of the Polish Chemical Society, Gdańsk, 1997*, S-7, P-33.