

Title: Symmetrical aminophosphinates

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ABSTRACT

Two types of α -aminophosphinates were prepared and studied: phosphinate analogues of iminodiacetic acid – aminobis(methyl(hydroxymethyl)phosphinic acid) (**IDP^{hm}**) and aminobis(methyl(2-carboxyethyl)phosphinic acid) (**IDP^{ce}**), and bis(aminomethylphosphinates) – (hydroxy(fenyl)methylen)bis(aminomethylphosphinic acid) (**PheOHABPin**) and (methylen)bis(aminomethylphosphinic acid) (**ABPin**). All prepared compounds were fully characterized (by NMR, MS, elemental analysis). One crystal structure was determined by X-ray singlecrystal analysis.

The diphosphinates were synthesized by Mannich type reaction, whereas the bis(aminomethylphosphinates) were prepared by multistep synthesis including reactive silylesters. Compounds were prepared in moderate or good yields

Acid-base and coordination properties of ligands were investigated and compared by potentiometric and NMR titrations. The values of protonation constants of aminogroups, which determine stability of complexes, showed surprising results. An extremely low basicity of nitrogen atom was found in diphosphinates. So, these compounds form just weak complexes. On the other hand the basicity of aminogroups in bis(aminomethylphosphinates) is distinctively higher than those found for other aminophosphinates. High basicity results in good complexation properties.

KEYWORDS:

Organophosphorus synthesis, metal complexes, thermodynamic stability.