

**Figure 1.** Structure-superstructure relation in  $(\text{CH}_2\text{Cl}_2)_{3,4} @ [(\text{Cp}^{\text{Bn}}\text{FeP})_{3,12}(\text{Cu})_{3,54}(\text{MeCN})_{1,46}]$

**Keywords:** giant supramolecule, pentaphosphaferrocene, superstructure, single-crystal X-ray diffraction

## MS33-P5 Zn(II) and Cu(II) coordination polymers based on anthracene ligands: Luminescence and antimicrobial properties

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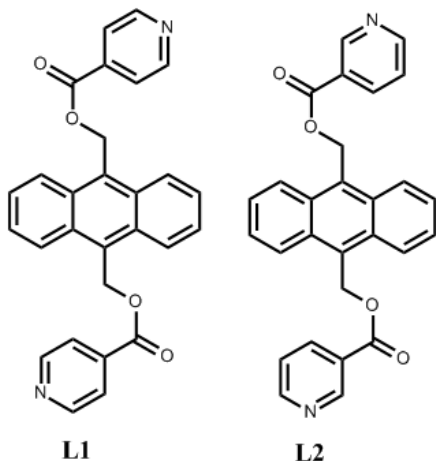
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Anthracene derivatives have been widely studied during the last two decades as perspective materials for luminescence [1]. Moreover anthracene derivatives have been intensively investigated as an attractive building block and starting material in OLEDs (organic light-emitting diodes), due to their unusual photoluminescence and electroluminescence properties [1]. Coordination compounds of Cu(II) and Zn(II) have been developed *in vitro* as promising materials for antimicrobial properties against *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa* etc... [2,3]. In this work, new coordination polymers of Zn(II) and Cu(II) based on new anthracene derivatives (Figure 1) will be presented combining both luminescent and antimicrobial properties. The ligand (L1) was already investigated with Ag(I) in our group. While the shift of emission and the decrease of eximer band are observed upon coordination to silver ion in crystalline form, amorphous nanowires showed a large emission band for this system [4]. Three coordination polymers of Cu(II) and three of Zn(II) were obtained with ligands L1 and L2 by slow liquid diffusion technique. Crystalline structures of coordination compounds were obtained from X-ray single crystal measurements, and solved by SHELX-97 program. Further luminescent and antimicrobial properties will be investigated.

### References

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**Figure 1.** Ligands used for obtaining coordination polymers of Cu(II) and Zn(II). L1 = anthracene-9,10-diylibis(methylene) diisonicotinate; L2 = anthracene-9,10-diylibis(methylene) dinicotinate.

**Keywords:** Coordination polymers, antimicrobial properties, luminescence

**MS33-P6 Giant**  
**Pentaphosphaferrocene-Based**  
**Supramolecules as Molecular Containers**

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An inorganic analogue of ferrocene, pentaphosphaferrocene,  $[\text{Cp}^{\text{R}}\text{Fe}(\eta^5\text{-P}_5)]$  ( $\text{Cp}^{\text{R}} = \eta^5\text{-C}_5\text{R}_5$ ,  $\text{R} = \text{Me}$  ( $\text{Cp}^{\text{Me}}$ ),  $\text{CH}_2\text{Ph}$  ( $\text{Cp}^{\text{Bn}}$ ),  $\text{PhC}_6\text{H}_5$  ( $\text{Cp}^{\text{BIG}}$ )), is able to coordinate  $\text{Cu}^+$  and  $\text{Ag}^+$  cations resulting in either coordination polymers or in giant supramolecules [1-7]. The self-assembled supramolecules of 2.1 – 4.6 nm in diameter can be isolated in high yields using special crystallization technique. A tetrahedral coordination of  $\text{Cu}^+$  together with the predetermined five-fold symmetry of the *cyclo*- $\text{P}_5$  ligand favors the formation of giant cages with fullerene [1,2] or fullerene-like [3, 4] topologies.

Pentaphosphaferrocene-based supramolecules can play a role of molecular containers (Figure 1). The central cavities can include metallocene and cage molecules, fullerene  $\text{C}_{60}$ , molecules of metastable compounds such as white phosphorous and yellow arsenic [6]. The ability of  $\text{CuX}$  to aggregation allows adapting supramolecule to encapsulate cationic guest molecules like  $\text{Cp}^*\text{Co}^+$ . Even more sophisticated supramolecules with multi-layered inorganic core built up with hundreds of metal, halogen and P atoms [5, 6] can be obtained, where external and internal cores are formed via  $\sigma$ - and  $\pi$ -coordination of the planar  $\text{P}_5$ -ring to copper, respectively.

Alternative way to influence the structure of the supramolecule is to use salts of copper(I) and silver(I) with larger anions. First results show that single-layered quasi-spherical supramolecules with large central cavity can be obtained by using of  $\text{RSO}_3^-$  anions that can coordinate three metal atoms with donor oxygen atoms. The resulting inorganic M-anion- $\text{Cp}^*\text{Fe}(\eta^5\text{-P}_5)$  core resembles an icosidodecahedron, which is however essentially vacant in metal cation positions. The  $\text{Cp}^*$ -based supramolecules encapsulate  $\text{Cp}^*\text{Fe}(\eta^5\text{-P}_5)$  molecules. Host-guest intermolecular interactions are discussed.

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