Molecular Tectonics: towards the formation of metal centred chiral networks based on cationic cyclometallated Iridium complexes

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Coordination polymers or networks are infinite and periodic architectures resulting from self-assembly of pre-programmed building blocks (tectons) in the presence of metal salts or complexes (metallatectons). The growing interest in this type of compound results from the properties they exhibit in catalysis, gas absorption, separation and luminescence.[1] Octahedral Iridium complexes are well known for their interesting photophysical properties,[2] and in, some cases, for their metal centred chirality (Δ or Λ configuration).[3] Previous work achieved in our laboratory showed convincing results and led to the synthesis of chiral and luminescent polyfunctionalized metallatectons and their self-assembly in the presence of metal salts into heterometallic mono- and bidimensional networks.[4] It is worth noting that, the chirality of this type of metallatecton, and thus the extended architectures, is centred only on the metal. Indeed, a homochiral and luminescent network has been obtained in enantiomerically pure form using an enantiopure Iridium complex. Following this path, we synthesized a new library of cationic cyclometallated Iridium complexes, both as racemic mixtures and as enantiopure species, with different coordination sites (pyridyl, carboxylic acid etc..). By modifying the metallatecton length, *i.e.* the distance between the two coordinating sites and the angle between them, new heterometallic chiral and luminescent architectures may be envisaged (Fig 1). The synthesis of such cationic Iridium complexes as well as their use for the formation of coordination polymers will be discussed.

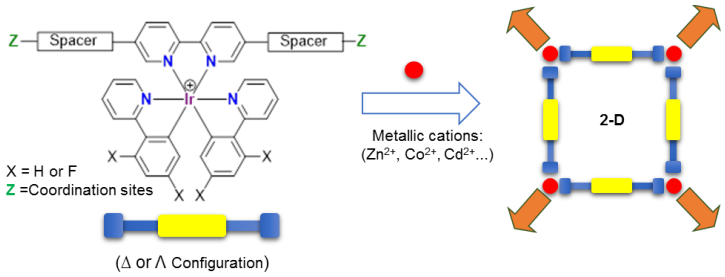

Figure 1. schematic representation of self-assembly of metallatectons with metallic salts

References:

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