



Il Dipartimento di Scienze Chimiche accoglie il dott. Thomas Scattolin che terrà un seminario dal titolo:

Sustainable synthetic routes to bioactive and photoemissive Late Transition MetalN-heterocyclic carbene complexes

Martedì 22 novembre 2022, alle ore 16.00, presso l'Aula H, Dipartimento di Scienze Chimiche, Via Marzolo, 1.

Transition metal complexes bearing N-heterocyclic carbene ligands (NHCs) have gained a place of crucial importance in numerous areas of research such as medicinal chemistry, material sciences and homogeneous/heterogeneous catalysis. In particular, the high stability of transition metal-NHC complexes is one of the main reasons for their growing use in medicinal chemistry, especially for the development of new promising anticancer and antibacterial drugs. The importance of NHC derivatives in the various areas listed above has resulted in numerous synthetic routes and protocols leading to their isolation on small and large scale. In this talk, an overview of the main synthetic routes employed for the preparation of this broad class of compounds along with their main applications will be presented. Particular attention will be paid to the synthesis of Late Transition metal-NHC complexes using weak bases, eco-friendly solvents and mild operating conditions. This simple synthetic approach, also known as the "weak base route", represents a recent development with yet unrealised potential. With the aim of making this approach even more sustainable and scalable, we have recently designed simple, efficient and versatile continuous flow reactors for the synthesis of a wide range of metal-NHC derivatives. More in detail, with the proposed setup (a PTFE tube containing potassium carbonate as a weak base) it is possible to convert the starting azolium salt and the metallic precursor into [Pd(NHC)Cl(R-allyl)], [Au(NHC)CI] and [Cu(NHC)CI] complexes. Based on these encouraging results, we successfully explored the weakbase-driven continuous flow synthesis of carbene-gold-aryls, metal-thiolates and carbene-metal-amides. Such macro-categories of compounds have received great interest for their application as valuable synthons, photo-emissive anticancer materials, (Figure agents and respectively 1).



Figure 1. Metal-NHC complexes obtained with continuous flow reactors Il Direttore del Dipartimento Michele Maggini