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Luminescent imidazo pyridine scaffold: luminescent and versatile core for different applications

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In the last few years, imidazo pyridine nuclei and derivatives have attracted growing attention due to their unique chemical structure and versatility, optical behaviours, and biological properties. This class of aromatic heterocycles has great potential in several research areas, from materials science to the pharmaceutical field, and in recent years many promising innovations have been reported in different technological applications, such as optoelectronic devices, sensors, anti-cancer drugs, and emitters for confocal microscopy and imaging. The purpose of this presentation is to show the reported applications of a large variety of molecular products, comprising the imidazo, pyridine nucleus and our recent study concerning luminescent imidazo, pyridine ligands and corresponding transition metal complexes. In general, small molecules with large Stokes shift emission are acquiring great interest, due to their potential application as eco-friendly and low-cost products in down-shifting emissive layers, both in lighting and photovoltaic fields, as well as confocal fluorescence microscopy. Because of their features, imidazo[1,5-a] pyridines derivatives are particularly well suited for employment in these fields. On the other hand, as a ligand, the imidazo[1,5-a]pyridine skeleton can coordinate a large variety of transition metal ions, producing a great number of metal complexes in a large variety of different coordination motifs, showing optical tunability, good solubility, intense emission and good quantum yield, strong pH dependence and good biocompatibility.