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LUMINESCENT METAL COMPLEXES: SYNTHESIS AND APPLICATIONS

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Research in light emitting materials have experienced a substantial growth during the last few years and it has become one of the most important topics in transition metal chemistry. Potential applications of luminescent compounds in sensors, OLEDs, photocatalysis and medicine (among other areas) explain the growing research in such species. Metal atom allows efficient harvesting emissive long-lived triplet excited states upon light and/or electrical excitation, which is advantageous for bimolecular photo-catalysis and luminescent sensing.

In one hand, the synthesis and potential applications of gold complexes as dopants in OLEDs will be commented. The variety of ligands with different donor centers that can coordinate to gold in their different oxidation states will permit the tuning of the emission energy almost over the whole of the visible spectrum.

In the other hand, finding luminescent drugs for their use with optical visualization techniques such as fluorescence microscopy is not common. Therefore, an elegant approach to overcome such problem would be the combination of a visualization agent with a selected therapeutic. Such bifunctional bioprobe, known as an optical theranostic or a trackable agent, would be able to provide relevant information regarding its biological interplay. The new knowledge could provide a major impact in medicine allowing the delivery of more efficient drug through a rationalized design. The design of bimetallic Re(I)/Au(I) or Ir(III)-Au(I) optical trackable probes, where the Re(I) or Ir(III) fragment are providing the optical properties whereas the Au(I) provides will be commented.