Title: **Luminescent 2D materials for intelligent inks.**

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This project is based on the synthesis of 2D materials composed of different lanthanides with simple carboxylate ligands. These materials contain Dy, Tb, Sm, Eu, Er or, Gd and are prepared with a microwave-assisted synthesis, establishing controlled conditions that are optimal for this synthesis that previously studied by the GMMF group.

It is very important to know their properties and the main characteristics of lanthanides is their magnetization and luminescence, although we will study only their luminescence. This property is only observed in some of our lanthanide complexes, which is due to the efficiency of the antenna effect produced by its ligands, specifically the benzoate ligand.

Once the different lanthanide complexes have been synthesized, a new heterometallic complex with different proportions of two different lanthanides will be synthesized. The aim is to obtain a magnetic and tunable luminescent material and test it in smart inks.

Keywords: microwave-assisted synthesis, luminescence, lanthanide complexes, antenna effect, heterometallic complex, smart inks.