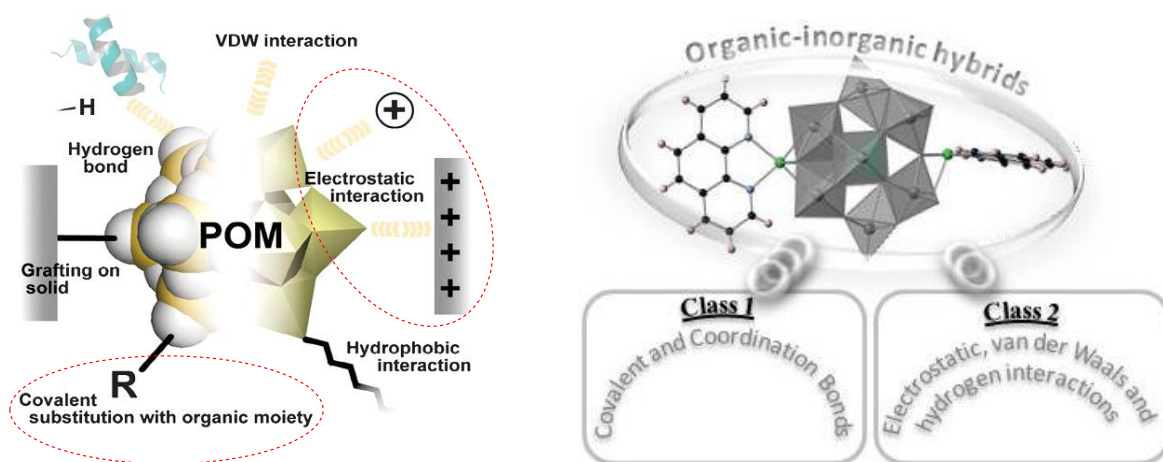


Scientific purpose of the project titled: “**Supramolecular interactions in systems based on polyoxometalates**” is synthesis and comprehensive physicochemical characterization of systems that comprise polyoxometalates (POMs) and quaterpyridine/Schiff-base ligands, altogether tethered by 3d(TM)/4f(RE) ions, in particular with regard to their magnetic and luminescent properties.

One of the main challenges herein will concern appropriate design of novel supramolecular aggregates, thus leading to the synthesis of hybrid materials of potential applications in the domains of high-density data storage, spintronics or photoresponsive materials.

Research plan is divided into two parts. The first one comprises synthesis and structural analysis of new organic-inorganic hybrid systems, formed between polyoxometallates (POMs) and supramolecular complexes of Schiff-base ( $L_1, L_2$ ) /quaterpyridine ( $L_3, L_4$ ) ligands with TM and/or RE ions achieved *via* electrostatic or covalent functionalization. Second part of the project focuses on investigation of SMM behavior as well as luminescent properties of designed systems (TM/RE complexes with ligands groups  $L_1-L_4$  as well as their hybrid POM congeners).



By setting into present trends of nanomolecular magnetism and photoemissive materials, research project will have significant impact on the knowledge expansion of coordination chemistry domain and application of such in preparation of organic-inorganic hybrid materials that belong to the family of photoactive SMM congeners. Such possibility of transferring SMM behavior of its individual counterparts (POM and Schiff-base/quaterpyridine complex) to novel hybrid systems could be of great applicative interest, as well as could result in new future trends. Anticipated research will partially satisfy scientific curiosity and expand former knowledge on coordination and supramolecular chemistry and luminescent SMM congeners. Undoubtedly, the project impacts 4 domains: pure science, domestic cooperation, opportunity of development for young scientists in the field of supramolecular chemistry, potential application of the research results.