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HYBRID WHITE LIGHT-EMITTING DIODES (WHLEDS) BASED ON ORGANOMETALLO-SILICA NANOPARTICLES

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The search of efficient sources of white artificial illumination has become increasingly widespread in the last years, driving to the development of new hybrid inorganic/organic emitting diodes (WHLEDs) architectures.[1]

Following with our research in the design of hybrid luminescent materials,[2] here we report the synthesis of new monochromatic- or the first white-emitting hybrid organometallo-silica nanoparticles. These latter have been prepared using a new synthetic approach consisting of the generation of a central nanobundle, built from the condensation of three different emitting complexes ($[Ir(dfppy)_2(PPETS)_2]OTf$, $[Ir(ppy)_2(PPETS)_2]PF_6$, $[Ir(ppy)_2(dasipy)]OTf$), previous to the formation of the mesoporous silica shield. These emitting nanoparticles have been implemented into a rubber-like coating and tested on top of a UV-LED, providing HLEDs with a very efficient white emission, which is stable over thousands of hours and mimics quite well the visible part of the sunlight spectrum.

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