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Engineering the optical response properties in metal-organic frameworks

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Metal-organic frameworks (MOFs), as a new generation of porous materials, have attracted great attention in the past two decades due to their modular and tailorable structures, exotic and interesting properties, as well as wide applications in various aspects such as gas storage, separation, sensor, catalysis, luminescence, drug delivery, and so forth. Nowadays, MOFs have a tremendous impact in the fields of chemistry, physics, materials sciences and engineering, etc. MOFs have very rich photon-related chemical and physical properties, most of which are very interesting, and have widely potential applications in various aspects. An important aspect is luminescence. Many luminescent MOFs are experimentally known, resulting from the use of organic, often polyaromatic linkers. Proposed applications include chemical and radiation sensing, imaging, solid-state lighting, and non-linear optics. However, the manipulation optical response properties at the molecular/atomic level are still a big challenge. Here, we for the first time report the optical properties engineering of paradigm MOF-5. The optical response properties could be systematically tuned at our own will, which greatly extend the absorption region of light spectrum. The optical engineering will pave the way towards MOF-5-based materials as devices with manipulating properties in the nanoelectronics and optoelectronics.

Biography

Li-Ming Yang has completed his Ph.D. at the age of 27 years from Jilin University and postdoctoral studies from University of Oslo, Norway; Donostia International Physics Center (DIPC), Spain; University of Georgia, Massachusetts Institute of Technology (MIT), USA. Now, he is working in KIST. He has published more than 30 papers in reputed journals (e.g., *J. Am. Chem. Soc., Chem. Eur. J., J. Mater. Chem.*, etc) and has been serving as an invited referee for several journals.

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