

Systematic Isoreticular Expansion of Titanium Metal-Organic Frameworks

Abstract

Titanium metal-organic frameworks (MOFs) are attractive materials for their intrinsic photoredox properties, photocatalytic activity, low toxicity, earth abundant, and superior chemical and thermal stability. Albeit, these features have prompted great interest, only a few titanium MOFs have been synthesized. Herein, we report the preparation, characterization, and crystallography of four new titanium MOFs that are the iso-reticular expansion of MIL-125. Using linkers 4,4'-biphenyl-dicarboxylate (BPDC), 4,4'-1,2-diazenediyl-dicarboxylate (DAzDC), 4,4''-terphenyl-dicarboxylate (TPDC), and 4,4'''-quaterphenyl dicarboxylate (QPDC), the crystalline MOFs were analyzed using powder X-ray crystallography.