

A Mixed Metal Porphyrinic Metal Organic Framework for solar driven overall water splitting

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Catalytical properties of porphyrin-based Metal Organic Frameworks (MOFs) are being extensively investigated given the major involvement of these molecules in enzymatic processes and the possibility to combine them with inorganic units in ordered porous structures of MOFs[1]. To enhance the chemical stability, tailor-made porphyrins with original coordinating functions have been recently developed [2], that extended the coordination chemistry well beyond carboxylates. We recently reported an especially robust polyphenolate porphyrin-based framework: MIL-173(Zr) [3]. A new synthesis strategy allowed us to replace up to 40% of Zr by Ti, thus impacting the band gap and photophysical properties (Figure 1). MIL-173(Zr/Ti) is active for the photocatalytic overall water splitting. This material operates efficiently under a photoinduced charge separation mechanism as revealed by photocurrent measurements and photoluminescence spectroscopy.

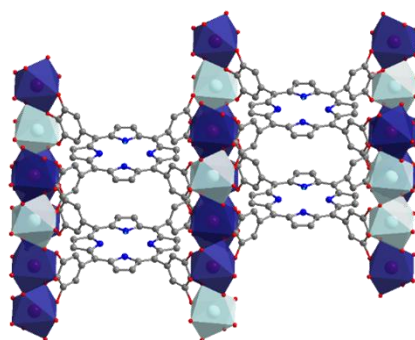


Figure 1 : Mixed-metal MIL-173(Ti/Zr) Metal Organic Framework

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