

# Reversible Water-Induced Structural and Magnetic Transformations and Selective Water Adsorption Properties of Poly(manganese 1,1'-ferrocenediyl-bis-H-phosphinate))

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## Abstract

© 2016 American Chemical Society. A flexible and hydrolytically stable metal-organic framework  $[\text{Mn}(\text{H}_2\text{O})_2(\text{Fc}(\text{PHOO})_2) \cdot 2\text{H}_2\text{O}]_n$  has been synthesized using ferrocene-based ligand bearing phosphinic groups ( $\text{Fc}(\text{PHOOH})_2 = 1,1'$ -ferrocenediyl-bis(H-phosphinic acid)). In this compound manganese atoms are bound by phosphinate fragments to give infinite chains, and the latter are interconnected by ferrocene groups to form two-dimensional coordination polymer. The elimination of both coordinated and lattice water molecules during heating up to 150 °C produced the compound, which is nonporous for nitrogen, but can selectively adsorb water over methanol and other solvents at 298 K. The reversible structural transformation during adsorption/desorption of water is also reflected in a change of magnetic properties of the metal-organic framework.

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