

W0313

Histidine Controlled Two-Dimensional Assembly of Zinc Phosphite Four-Ring Units. Xianhui Bu and Lan Chen, Dept. of Chemistry and Biochemistry, California State Univ., Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840 USA.

Despite numerous examples of metal-organic frameworks in which metal centers or clusters are joined together by bi- or polydentate ligands into extended structures, biologically important amino acids, histidine in particular, are rarely known to serve as bridging ligands for the construction of open-framework architecture. Here we report hydrothermal self-assembly between neutral zwitterionic histidine molecules and inorganic secondary building units (i.e., $(\text{Zn-O-P-O})_2$ four-rings) into a crystalline solid containing infinite two-dimensional arrays. We demonstrate that the acid-base and coordination chemistry of histidine can be controlled to promote the formation of open architecture with bridging histidine ligands instead of the commonly observed metal- chelates with chelating histidine ligands. Crystallographic data for $\text{Zn}(\text{HPO}_3)(\text{dl-C}_6\text{H}_9\text{N}_3\text{O}_2)(\text{H}_2\text{O})_{1/2}$, $C2/c$, $a = 15.1307(3)\text{\AA}$, $b = 8.4230(2)\text{\AA}$, $c = 16.6322(4)\text{\AA}$, $\beta = 100.420(1)^\circ$, $V = 2084.75(8)\text{\AA}^3$, $Z = 8$.

We thank the support of this work by the donors of the Petroleum Research Fund (administered by the ACS) (Grant Number: 41382-GB10) and the National Institutes of Health (Grant Number: 2 S06 GM063119-05).