

# Synthesis and Characterization of the Manganese Pyroarsenate $\text{Mn}_2\text{As}_2\text{O}_7 \cdot 2 \text{H}_2\text{O}$

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Pyroarsenate

The manganese pyroarsenate hydrate,  $\text{Mn}_2\text{As}_2\text{O}_7 \cdot 2 \text{H}_2\text{O}$ , has been obtained as a single phase product using hydrothermal methods and the structure has been determined by single crystal X-ray diffraction. The title compound crystallizes in the monoclinic space group  $\text{P}2_1/n$  with  $a = 6.6576(4)$ ,  $b = 14.555(1)$ ,  $c = 7.8147(5)$  Å,  $\beta = 94.935(1)^\circ$ ,  $V = 754.46(8)$  Å<sup>3</sup> and  $Z = 4$ . The manganese ions are each coordinated to five oxygen atoms and a water molecule in a distorted octahedral arrangement. Edge-sharing  $\text{MnO}_6$  octahedra form chains which are connected to a three-dimensional framework by  $\text{As}_2\text{O}_7^{4-}$  ions. The pyroarsenate anion, which attains a nearly eclipsed conformation, has a mean As-O distance for the terminal As-O bonds of 1.669(2) Å, while for the bridging oxygen atom a mean value of 1.757(2) Å is observed. Magnetic susceptibility measurements indicate the presence of high-spin  $\text{Mn}^{2+}$  ions. Thermogravimetric as well as IR and Raman spectroscopic studies of  $\text{Mn}_2\text{As}_2\text{O}_7 \cdot 2 \text{H}_2\text{O}$  are presented.