

CRYSTAL STRUCTURE DETERMINATION OF THE SILVER CARBOXYLATE DIMER [Ag(O₂C₂₂H₄₃)]₂, SILVER BEHENATE, USING POWDER X-RAY DIFFRACTION METHODS

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High-resolution powder X-ray diffraction has been used to determine the crystal structure of silver behenate, [Ag(O₂C(CH₂)₂₀CH₃)₂]. The unit cell is triclinic with cell dimensions of $a = 4.1769(2) \text{ \AA}$, $b = 4.7218(2) \text{ \AA}$, $c = 58.3385(1) \text{ \AA}$, $\alpha = 89.440(3)^\circ$, $\beta = 89.634(3)^\circ$, $\gamma = 75.854(1)^\circ$. The structure is characterized by an 8-membered ring dimer of Ag atoms and carboxyl groups joined by four-membered Ag-O rings with fully extended zigzag side chains, giving rise to a two-dimensional network in the bc plane. This structure is supported by EXAFS measurements of the local structure around the silver atoms.

