CRYSTAL STRUCTURE DETERMINATION OF THE SILVER CARBOXYLATE DIMER [Ag(O2C22H43)]2, SILVER BEHENATE, USING POWDER XRAY 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) Å, b = 4.7218(2) Å, c = 58.3385(1) Å, α = 89.440(3)°, β = 89.634(3)°, γ = 75.854(1)°. 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.