

Solventothermal Synthesis and Structure of the Polymeric Thioarsenates(III) (Et₄N)₂As₆S₁₀ and (Et₄N)₂As₈S₁₃

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Reaction of (Et₄N)Cl with As₂S₃ and Na₂S in acetonitrile at 110°C affords the polymeric thioarsenate(III) (Et₄N)₂As₆S₁₀ in which the cyclic [As₃S₆]³⁻ and chainlike [As₃S₇]⁵⁻ trinuclear molecular building units are linked together through common sulphur atoms into infinite double chains. In contrast, reaction of the same starting materials at higher temperatures (180°C) in water leads to formation of a markedly denser phase (Et₄N)₂As₈S₁₃, whose thioarsenate(III) ¹[As₈S₁₃]²⁻ anions exhibit a higher condensation grade. These likewise double chains are [∞]composed of cyclic [As₃S₆]³⁻ and dinuclear [As₂S₅]⁴⁻ units with shared ψ-AsS₃ tetrahedra corners. Analogous treatment of (Et₄N)Cl with As₂Se₃ and Na₂Se in acetonitrile (T=110°C) yields (Et₄N)[SeAsSe₇].

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