185c Strongly Birefringent Nanobelts and Nanowires

Michael B. Sigman and Brian A. Korgel

Orthorhombic Pb3O2Cl2 (mendipite) nanobelts micrometers in length and tens of nanometers wide were synthesized by a solventless thermolysis of a single source precursor in the presence of capping ligands. The nanobelts are single crystals elongated preferentially in the [010] direction. Pb3O2Cl2 is a birefringent material due to its anisotropic crystal structure. The nanobelts exhibit birefringence enhanced by one order of magnitude as a result of their small size and belt geometry exceeding the birefringence of naturally occurring minerals, including CaCO3 and TiO2. The preferential elongation of the nanobelts in the [010] direction contributes to this enhancement.