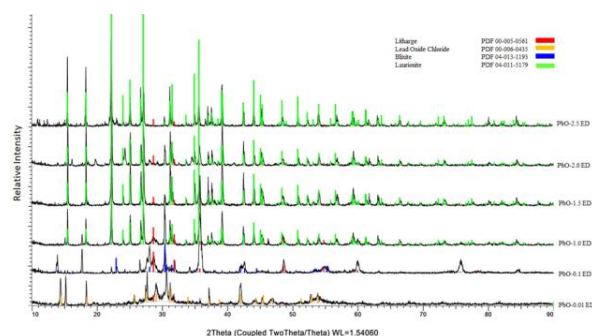


Solid transformation of litharge into laurionite and blixite

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The solid transformation of litharge (PbO) into laurionite (PbCl(OH)) and blixite (Pb₈O₅(OH)₂Cl₄) was studied in a matrix of magnesium chloride MgCl₂·6H₂O from 0.008 to 2.0 mol·kg⁻¹ and equal concentration of 0.042 mol·kg⁻¹ EDTA ((CH₂COO)₂N(CH₂)₂N(CH₂COO)₂)⁴⁻) in all samples. Litharge was used as the starting solid for the experiments. Solid and solution chemistry analyses were completed throughout the experiments. Experiments were conducted at ambient laboratory temperature and pressure, with insitu solution temperatures ranging from 21.08-21.84°C and insitu pH ranging from 8.00-11.86. XRD data in the figure below is representative of 3936 days.



SEM/EDS analysis showed crystalline laurionite in 0.8-2.0 mol·kg⁻¹ MgCl₂·6H₂O matrices with a minimal presence of other solids. Litharge and blixite were visualized at lower ionic strengths, indicating a gradual solid transformation to laurionite with increasing Cl⁻ concentration. The Pitzer model was used to predict the formation of laurionite and blixite at the experimental conditions.

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