

Thermal Stability of FeS₂ Cathode Material in “Thermal” Batteries: Effect of Dissolved Oxides in Molten Salt Electrolytes

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The thermal stability of FeS₂ cathode material for thermal batteries is investigated in the LiCl-KCl eutectic containing up to 10 wt% Li₂O (used as anti-peak). The results show that the decomposition of pyrite shifts to higher temperatures in the presence of molten salts as the S₂ gas is repressed by the liquid phase. For high lithium oxide contents the decomposition temperature of pyrite decreases by 100 °C. In addition Li₂FeS₂ as reaction product is evidenced whereas Li₃Fe₂S₄ is expected from literature data.

Key words: Thermal Batteries; Electrolyte; Pyrite; Oxide; Molten Salt; LiCl-KCl Eutectic.