Lithium Extraction from Brine using Li/Al Layered Double Hydroxide Chloride

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The demand for lithium batteries is projected to almost double by the year 2025, between big consumers such as Panasonic and Tesla. Most of the lithium produced for batteries is done through open pit mining and extraction from salt-lake brines. A new method to selectively extract lithium from brines uses sorbents. This project focused on synthesizing high surface area nanoparticle lithium-aluminum layered double hydroxide chloride sorbent using nanoparticle precursors, gibbsite.

Analysis of X-Class Solar Flares in the AIA 131A Channel

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This project represents a small part of the general study by NASA's Marshall Space Flight Center into how the evolution of high temperature plasma is dependent upon the morphology of solar flares. Data for this analysis was provided by the Solar Dynamics Observatory (SDO), a NASA satellite launched in 2011 as part of the Living With a Star initiative. The SDO carries an instrument called the Atmospheric Imaging Assembly (AIA) which uses Fe V, XX, and XXIII to focus on flaring regions of the Sun. This presentation will detail the process of filtering usable satellite data using SunPy, modeling different parameters of solar flares, and mapping images of flares to create movies.