

Development of Renewable Nanoparticle Platform for Green Energy Production and Storage Applications (SBIR Phase II, Award No. 1927077)

Yanying Lu, Mel Luetkens, Virginia Irwin Klausmeier

Sylvatex (SVX) Inc., 1650 Harbor Bay Pkwy, Ste 220, Alameda CA 94502;

Contact: admin@sylvatex.com; Website: https://sylvatex.com/

Abstract

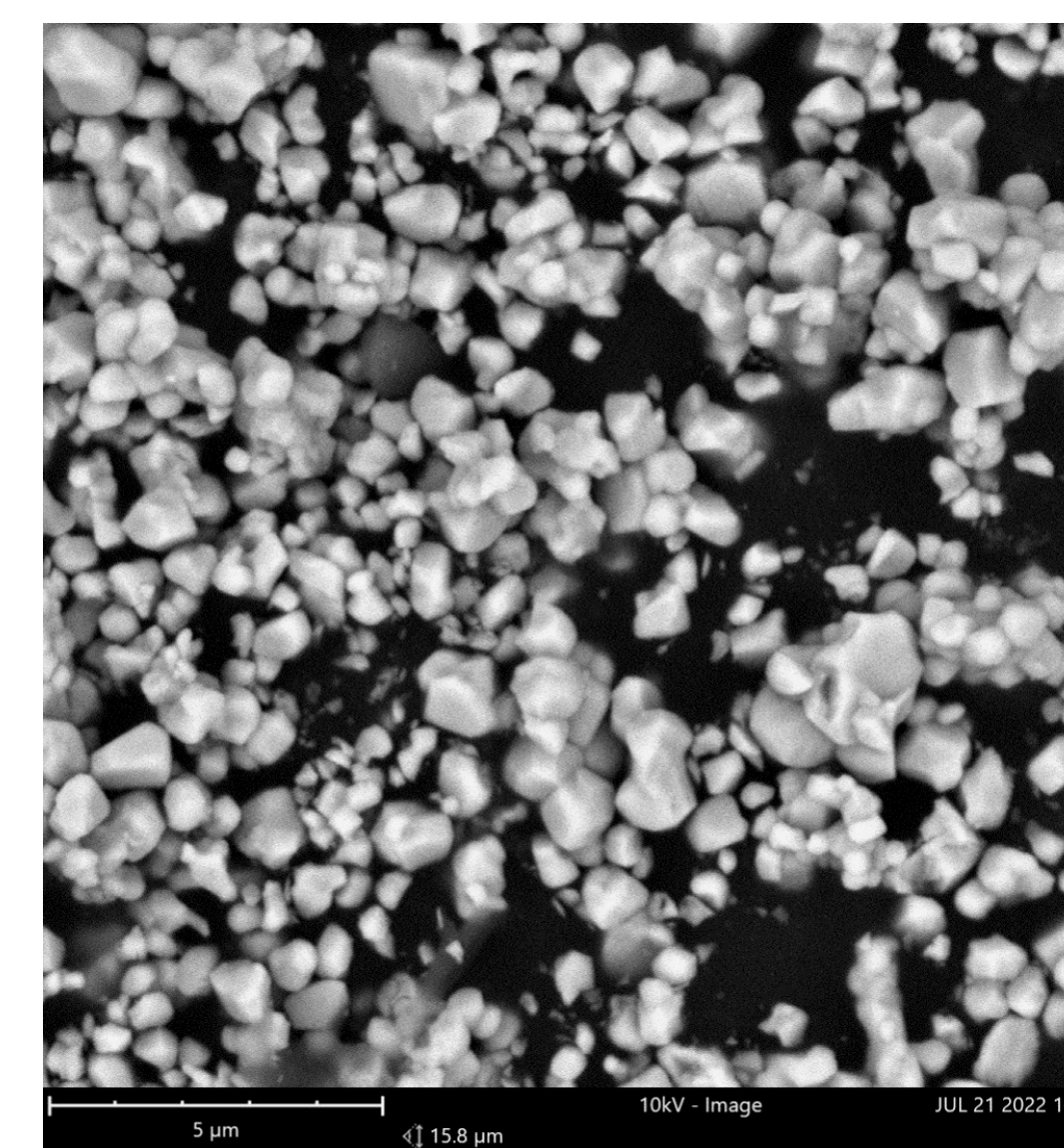
The Sylvatex technology is a **green-chemistry platform** that can be used to **synthesize a variety of cathode materials including LFP, NMC, NCA, and LMO**

The **simplified process** enables **higher production rates** that will enable cathode material producers to meet the growing Li-ion battery demand; The process also **reduces unnecessary waste** generation and **eliminates the use of water** in active cathode material production (CAM)

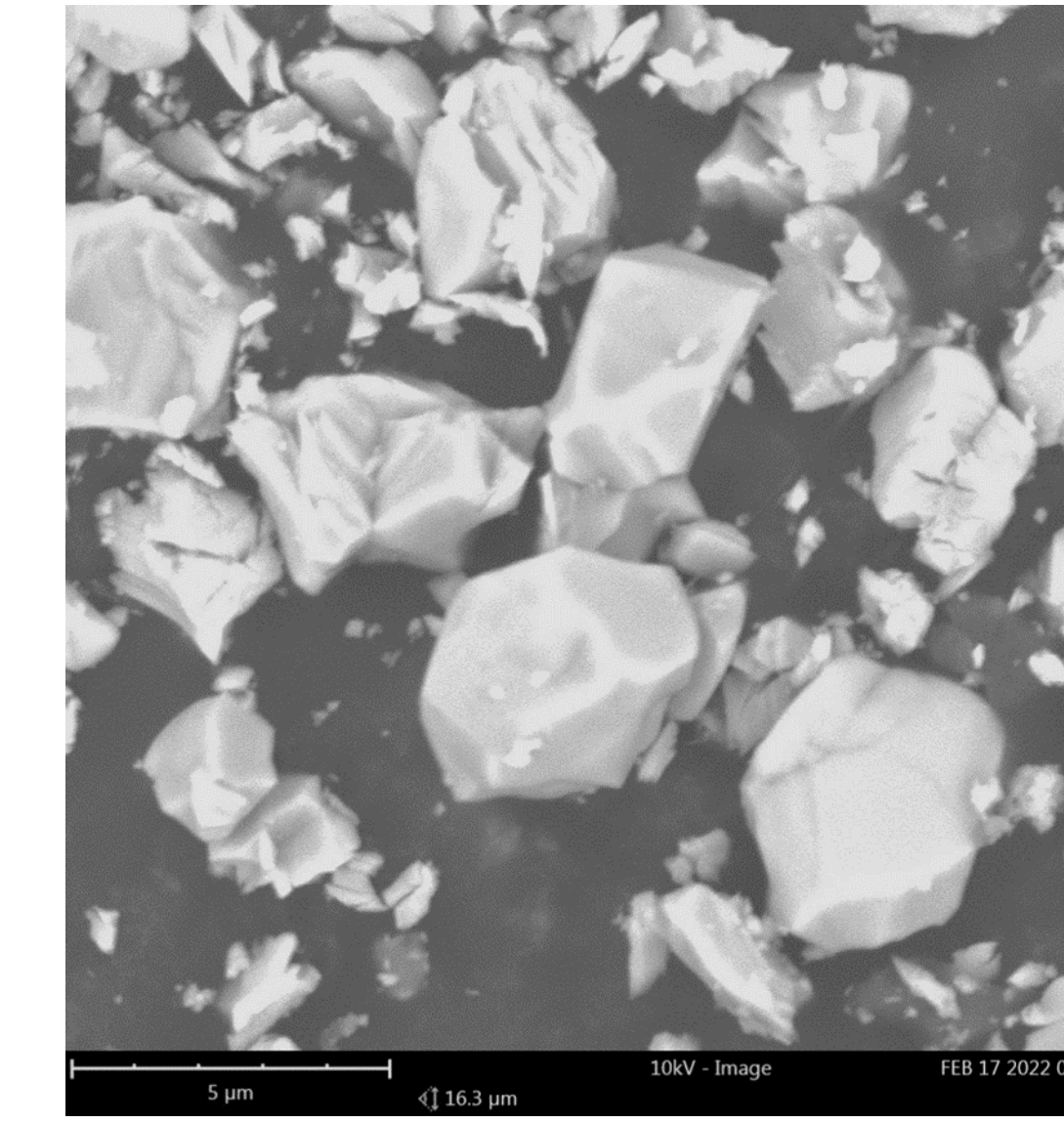
This process is **compatible with recycled cathode materials**. For example, we were able to take NMC111 scrap and convert it to CAM including NMC111, NMC622, and NMC811 with the adjustments in stoichiometry.

Achievements

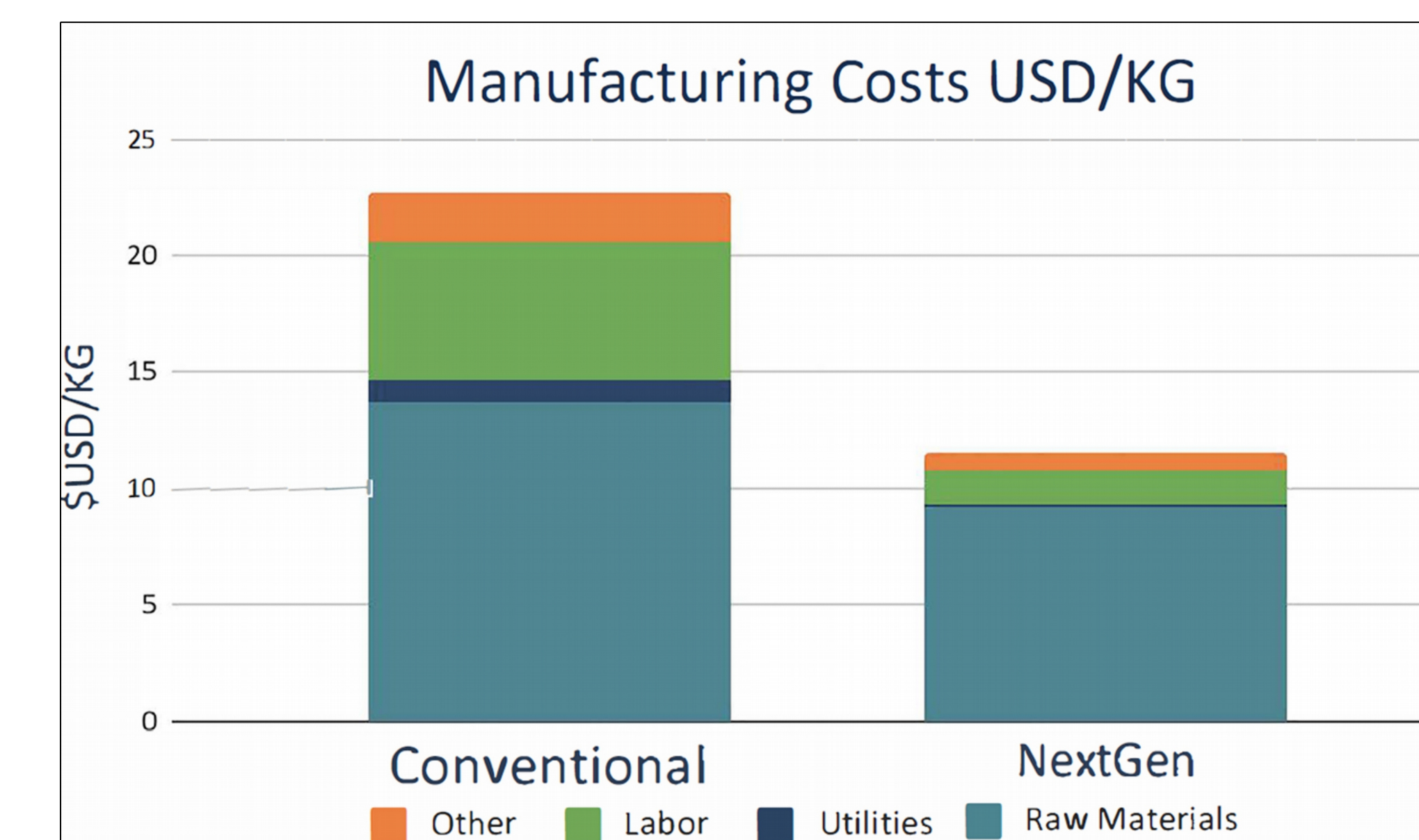
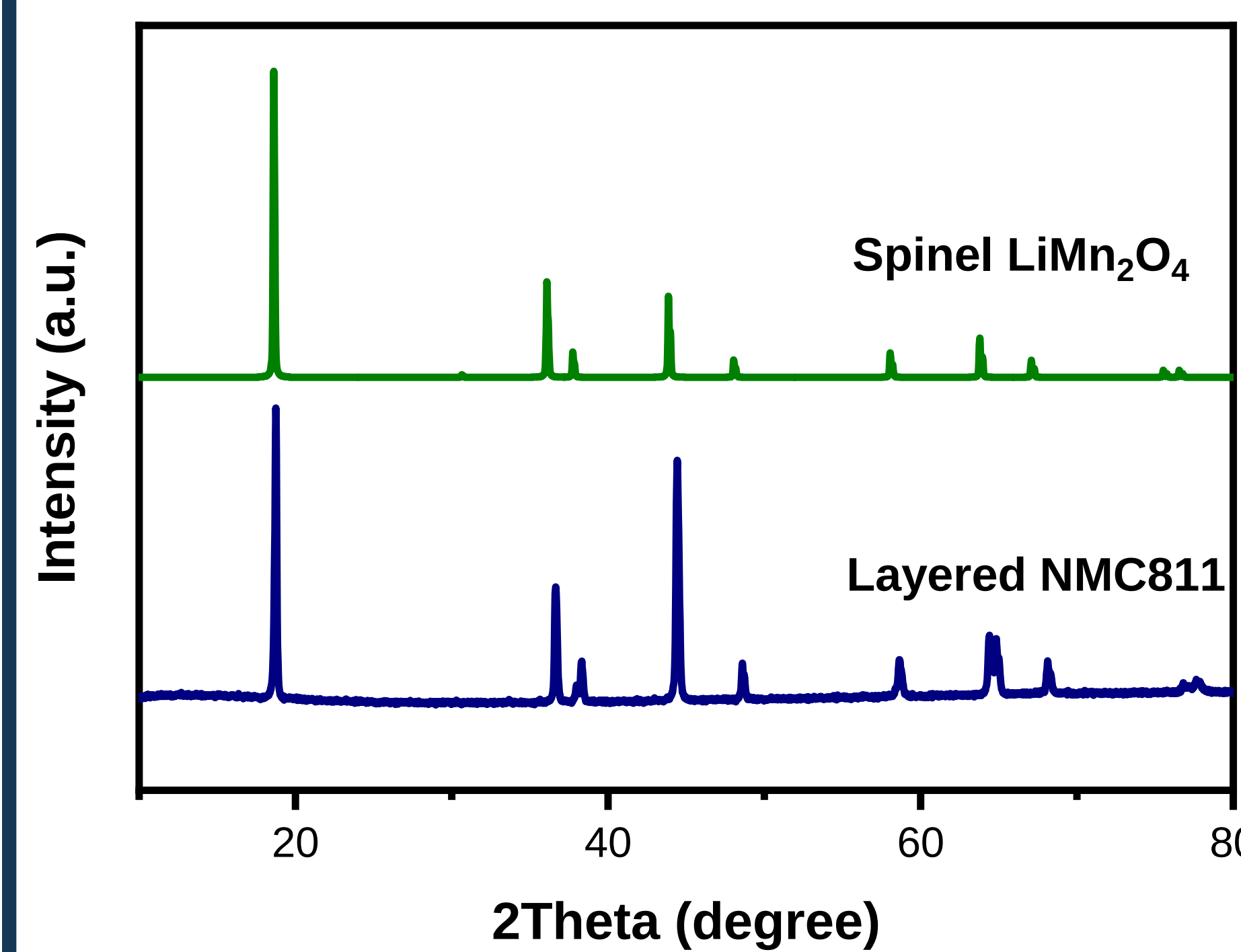
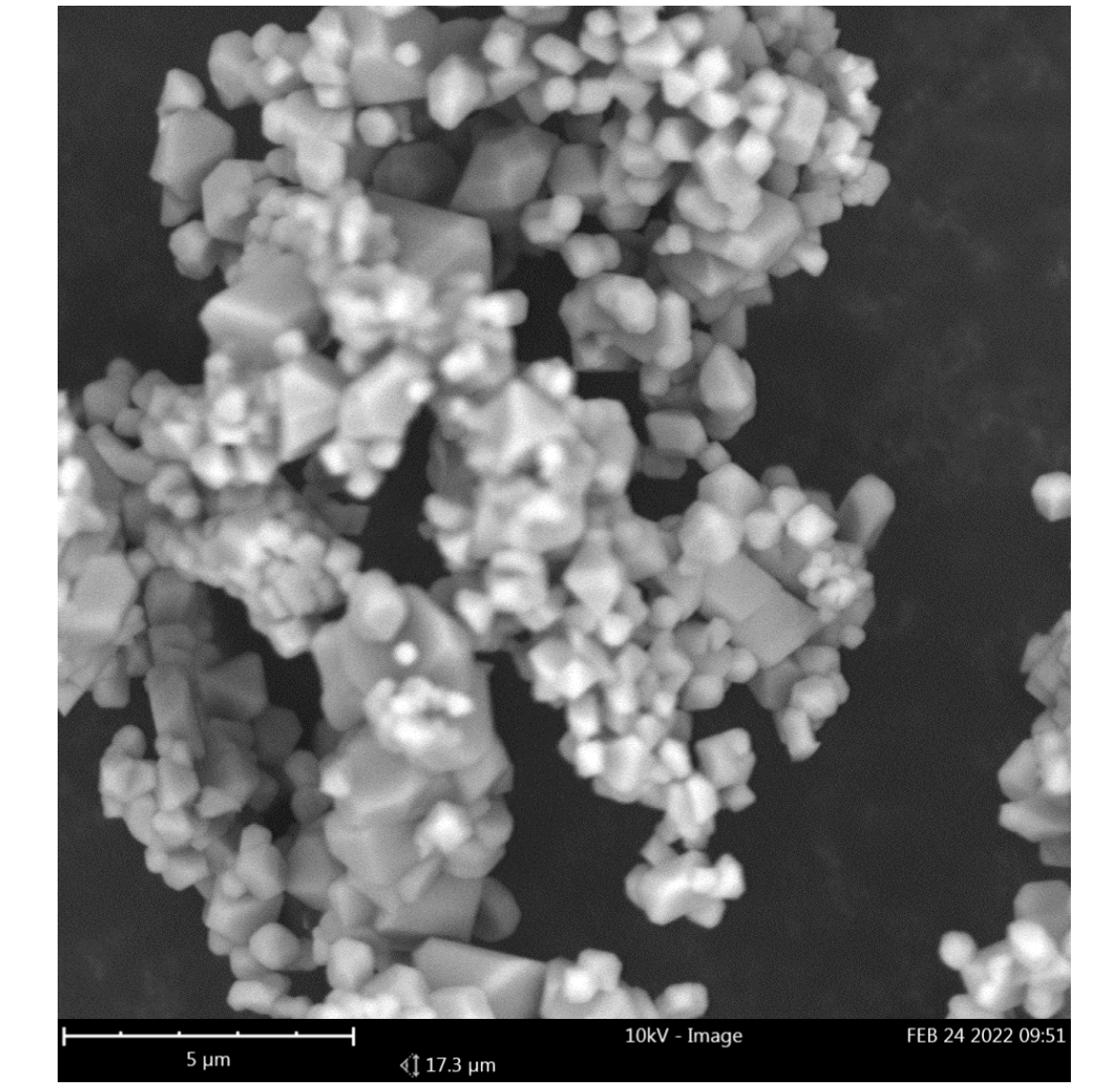
NMC622



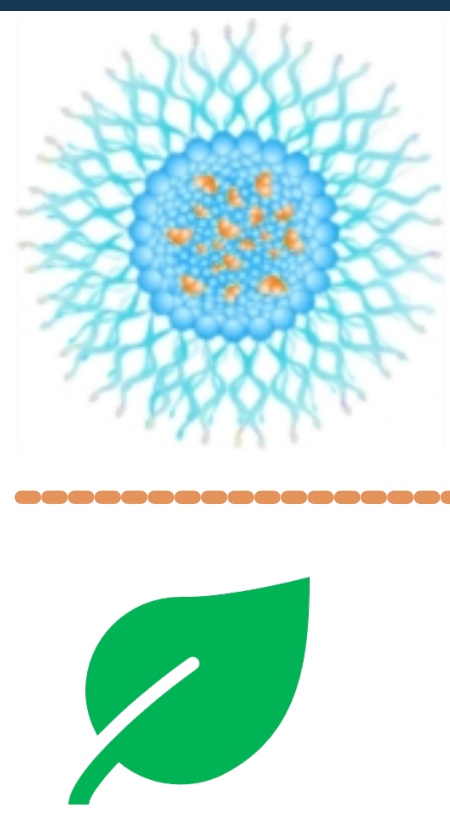
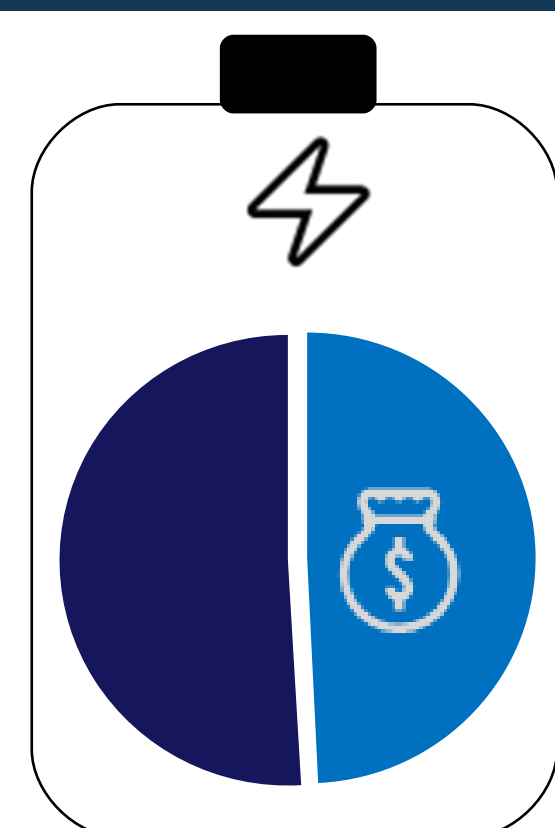
NMC811



LMO



Objectives and Approach

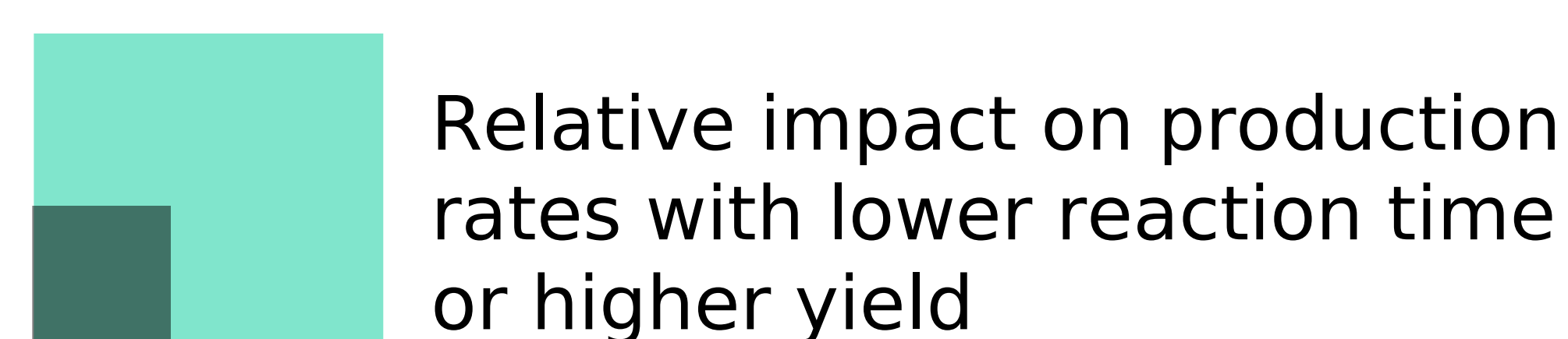
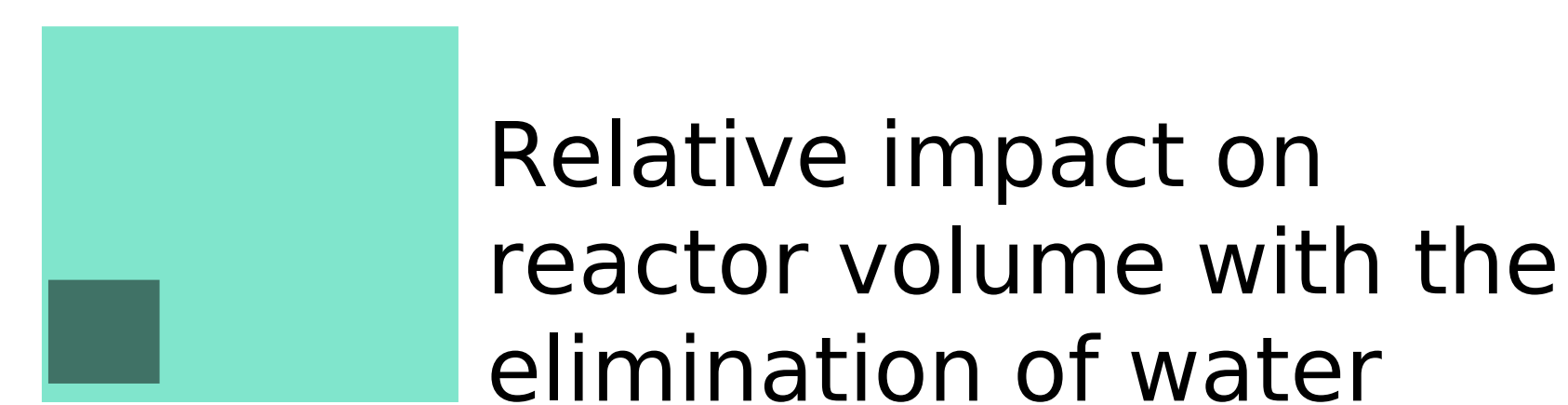


Cathode is up to **50%** Cost of Li-Ion Battery

Unique Sylvatex Process
(LMO NMC LFP Cathode Materials)

Reduce Cathode Production Cost

SVX close the loop < 2 hours



Recycle is available as metal compounds, which are generally compatible with our process

Current work and next steps

Sample customers across the value chain including CAM producers and users

Conduct detailed analysis of physical properties and electrochemical performance leading to process optimization

Reference:

- The White House. 2021. FACT SHEET: President Biden's Leaders Summit on Climate | The White House
- Zeng, Xiaoqiao, et al, Advanced Energy Materials 9.27 (2019): 1900161.

