

# American Manganese Successfully Upcycles EV Battery Black Mass into NMC-811 Cathode Precursor

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SURREY, September 29, 2021 - [American Manganese Inc.](#) ("AMY" or the "Company") (TSXV:AMY)(OTCQB:AMYZF)(FSE:2AM) is pleased to report the successful upcycling of lithium-ion battery black mass into NMC-811 (nickel-manganese-cobalt oxide) cathode precursor, using AMY's RecycLiCo&#8482; closed-loop process. These results are a continuation of earlier success where the Company upcycled the same black mass sample into NMC-622, as announced in the Company's August 24, 2021 news release.

"The production of NMC-811 and NMC-622 cathode precursor directly from the same lithium-ion battery black mass sample demonstrates RecycLiCo's ability to adjust its product output to changing battery cathode precursor demands of future customers," said Larry Reaugh, President and CEO of American Manganese. "Our testing program aims to grow strategic partnerships with leaders in the electric vehicle and lithium-ion battery industry and we are pleased to demonstrate our practical and efficient solution for achieving high-quality cathode precursors with one closed-loop process."

Scanning Electron Microscopy Scan of NMC-811 Cathode Precursor from Upcycled Lithium-ion Battery Black Mass

Lab-scale leaching tests confirmed over 99% leach extraction efficiency of lithium, nickel, manganese, and cobalt. Following the recovery of cathode precursor material (nickel, manganese, and cobalt), the RecycLiCo&#8482; process separately extracts high purity lithium while regenerating process chemicals for reuse in the process. The closed-loop and value-added processing methods achieve low chemical consumption, good overall mass balance, and refined final products that are key to lithium-ion battery manufacturing.

The black mass sample was sent by an electric vehicle manufacturer to confirm the viability of American Manganese's patented process to extract valuable lithium-ion battery materials. The black mass was produced by mechanical size reduction of end-of-life lithium-ion batteries, resulting in a powder substance that contains critical battery materials, including lithium, cobalt, nickel, and manganese, as well as copper, aluminum, and graphite.

Black Mass from Mechanically Treated Electric Vehicle Batteries

The solution produced after leaching the black mass is adjusted to the desired ratio of nickel, manganese, and cobalt before the direct co-precipitation of the NMC-811 cathode precursor. The number designation following NMC indicates the ratio of nickel, manganese, and cobalt contained (i.e. the NMC-811 ratio is 80% nickel, 10% manganese, and 10% cobalt). Modern electric vehicle battery packs are predominantly shifting to higher nickel-containing cathode materials and American Manganese has demonstrated this essential processing flexibility to upcycle older electric vehicle battery materials into the next generation of lithium-ion battery cathode precursor materials.

About American Manganese Inc.

[American Manganese Inc.](#) is a critical minerals company focused on the upcycling of lithium-ion battery waste into high-value battery cathode materials, using its closed-loop RecycLiCo&#8482; process. With minimal processing steps and up to 99% extraction of lithium, cobalt, nickel, and manganese, the upcycling process creates valuable lithium-ion battery materials for direct integration into the re-manufacturing of new

lithium-ion batteries.

On behalf of Management

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