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Energy is one of the major challenges of the twenty-first century for applications including power generation and storage. Developing state of the art materials would facilitate the implementation of renewable energy sources as well as significantly reduce the carbon footprint of the transportation sector. A low cost, robust synthesis process with high reproducibility is required for the production of nanostructured lithium-ion battery cathode materials. Lithium-ion batteries are considered an attractive power source for portable devices, electric and hybrid electric vehicles, and large renewable power facilities. $Li_{1.2}Ni_{0.13}Mn_{0.53}Co_{0.13}O_2$ composite materials with layered structures have received attention as high-capacity, low cost, and safe cathode materials for lithium-ion batteries. The conventional synthesis method for these materials is co-precipitation, which has challenges associated with scale up. Therefore a spray pyrolysis synthesis was developed by this group as a scalable, low cost production method. Due to the formation mechanism of the particles, the product contains hollow spheres, which cause low bulk density. Recently, Washington University in St. Louis developed a scaled-up spray pyrolysis process for the synthesis of non-hollow, solid lithium transition metal oxide materials. The method at present is capable of producing high quality battery materials at close to 50 gram per hour scale. In the present study layered $Li_{1.2}Ni_{0.13}Mn_{0.53}Co_{0.13}O_2$ material is produced and the electrochemical properties will be discussed.