

## Reuse of Spent Lithium Battery for the Production of Environmental Catalysts

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**Abstract :** This study aims to recycle and reuse of spent lithium-cobalt battery and lithium-iron battery in the production of environmental catalysts. The characteristics and catalytic activities of synthesized catalysts for different air pollutants are analyzed and tested. The results show that the major metals in spent lithium-cobalt batteries are lithium 5%, cobalt 50%, nickel 3%, manganese 3% and the major metals in spent lithium-iron batteries are lithium 4%, iron 27%, and copper 4%. The catalytic activities of metal powders in the anode of spent lithium batteries are bad. With using the precipitation-oxidation method to prepare the lithium-cobalt catalysts from spent lithium-cobalt batteries, their catalytic activities for propane decomposition, CO oxidation, and NO reduction are well improved and excellent. The conversion efficiencies of the regenerated lithium-cobalt catalysts for those three gas pollutants are all above 99% even at low temperatures 200-300 °C. However, the catalytic activities of regenerated lithium-iron catalysts from spent lithium-iron batteries are unsatisfied.

**Keywords :** catalyst, lithium-cobalt battery, lithium-iron battery, recycle and reuse

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