

# Production and characterization of FePO<sub>4</sub> electrode material from sewage sludge incineration ash and Iron ion-containing acidic wastewater

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We have examined the extraction of phosphorus (P) component from a sewage sludge incineration ash with an alkaline wastewater followed by Fe ion-containing acidic wastewater for recovering a phosphate component, which was utilized for the manufacture of a phosphate fertilizer and FePO<sub>4</sub> cathode material. The major components of the ash were P (13 wt%), silicon, calcium, aluminum, iron, magnesium, barium, potassium, and sodium. The efficiency of P extraction by the alkaline wastewater (0.5~1.0 mol L<sup>-1</sup>) was similar to that of extraction with a pure NaOH (also 0.5~1.0 mol L<sup>-1</sup>) at 70°C. The P component in the residue after treating with an alkaline wastewater was extracted with Fe ion containing acidic wastewater at pH=0.1~2.0 at a room temperature. The toxic heavy metals were scarcely present in the P fraction. Our researching results revealed an available method for the production of high-quality P fertilizer and FePO<sub>4</sub> electrode material from a sewage sludge and industrial wastewaters.