

Electro-Oxidation of Metals and Inorganics in Metallurgical Operations

Overview

The scope of this project consisted of electrochemical synthesis of strong oxidants such as hydrogen peroxide, potassium persulfate and ozone for *in-situ* oxidation of metallurgical wastes. The electrocatalysts developed for electrochemical generation of oxidants were investigated in detail in order to tune the electrochemical processes occurring at anode and cathode of electrochemical flow cell.

The structure-activity-stability relationship of electrocatalysts optimized for electrochemical generation of oxidants was studied to gain a deeper understanding of the selective formation of oxidants.

In-situ oxidation of metals and inorganics wastes produced from metallurgical operations by electrochemical generation of oxidants is an efficient method that could potentially save waste treatment costs and make it sustainable. Discovery of durable catalysts and demonstration of electrochemical processes with optimal operational parameters to achieve high waste treatment efficiency is valuable for industrial scale application. The objective of this project was to explore the catalysts suitable for selective electrochemical generation of strong oxidants and to validate its robustness during treatment of samples containing metallurgical wastes.

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