Recovery of Submicron-Sized Silicon-Rich Powder from Silicon Sawing Waste for Electrocatalyst of Methanol Electrooxidation

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This study proposed a feasible process for recovering Si-rich powder at room temperature for electrocatalyst applications. The proposed process was successively performed through ultrasonic treatment for particle dispersion, magnetic separation for metal removal, and centrifugation for size classification. The experimental results indicated that the recovered Si-rich powder contained 85 wt.% Si and 346 ppm Fe. Subsequently, the recovered powder was directly mixed with carbon to prepare an electrocatalyst for methanol electrooxidation. Our study indicated that the electrocatalytic applications of fine Si powder may be a suitable incentive to recycle Si from sawing waste.

Keywords: Recovery, Silicon, Iron, Sawing Waste, Magnetic Separation, Centrifugation, Electrocatalyst

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