

### Separation of Si and SiC from Silicon waste slurry

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Photovoltaic (PV) technology is an important source of clean electrical energy. Although the PV industry has grown markedly, the current PV industry requires substantial amounts of silicon, which has caused a shortage of feedstock and increased feedstock price.

When manufacturing silicon wafers, a silicon ingot is sliced by a multi-wire saw with an diethylene glycol solution and silicon carbide (SiC) abrasives. Although the cutting wires are thin, roughly 30% of the silicon ingot becomes waste in slurries during sawing. This silicon waste slurry typically contains silicon kerf-loss, sawing solution, and many tiny iron fragments from the worn saw wire.

Recycling silicon waste slurry may increase the silicon supply.

In this work, Silicon waste slurry containing Silicon and silicon carbide, diethylene glycol from ingot wafer slicing processing was investigated for recycling technology.

The centrifugal separator for silicon waste slurry recycling was used at reaction conditions respectively.

The recovery of silicon and silicon carbide, diethylene glycol were characterized by Fourier transformed - infrared (FT-IR) spectroscopy, field emission scanning electron microscope (FE-SEM) and Particle size distribution(PSD).