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Laser Recycling of Silver from Waste Silicon Solar Cells

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http://www.faculty.virginia.edu/laser/

Innovation

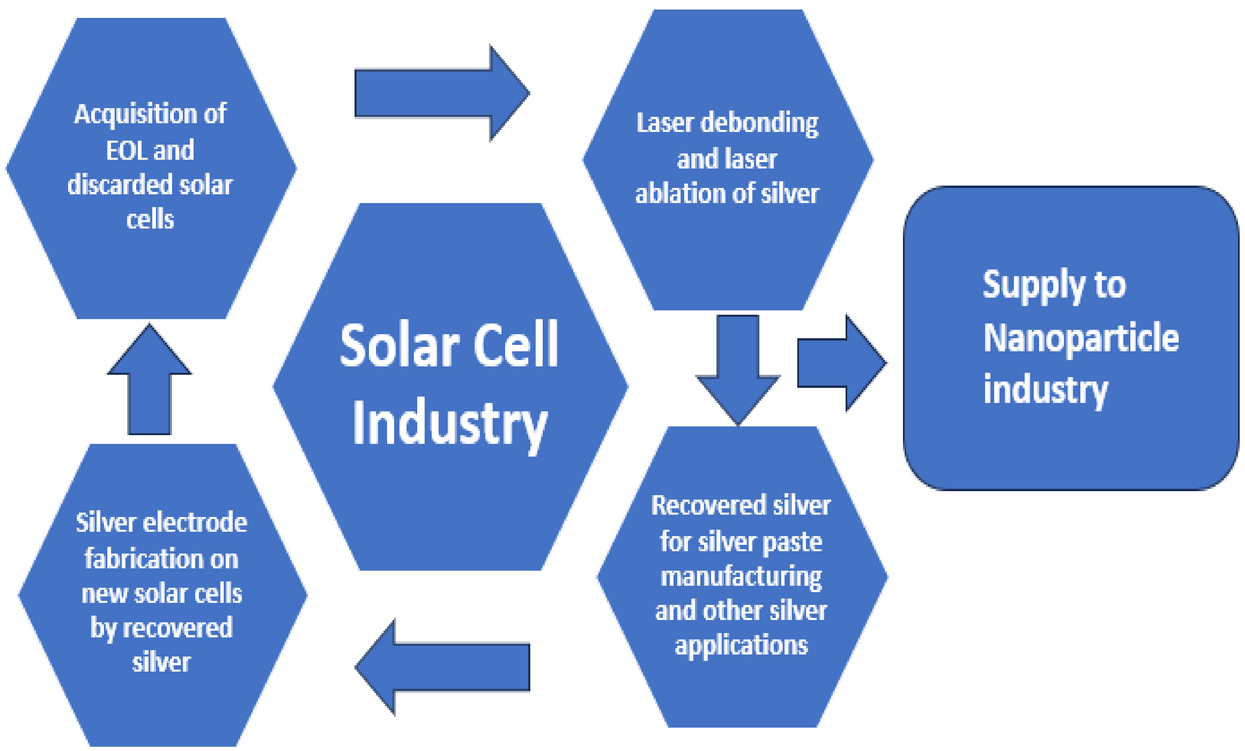
- Our innovation involves utilizing laser ablation and debonding techniques to revolutionize the recovery process of precious metals such as silver and gold from end-of-life solar cells and electronic waste (e-waste), directly producing high-value metal nanoparticles.

Unique Capabilities

- Our unique capabilities lie in our ability to directly produce high-value metal nanoparticles using environmentally friendly and cost-effective laser techniques, optimize recovery rates, and establish collaborations across the supply chain.

Objectives

- Our objectives include refining recovery processes to achieve high purity levels suitable for commercial applications, increasing recovery speeds, and establishing partnerships with industry stakeholders for consistent feedstock supply and metal sales.



Circular economy chain for silver recovery from solar cells.

How we do it

- We utilize a simple setup with pulsed laser to vaporize or debond specific materials from end-of-life solar cells and electronic waste, resulting in the generation of high-purity metal nanoparticles or bulk separation
- We use machine learning and image processing techniques to automate the process to improve the speed of recovery and the purity of the product.

Revolutionary Impact

- Transforming recycling practices: Environmentally Friendly Solution for Circular Economy with Direct Metal Nanoparticle Production.
- Significantly reduces waste, conserving resources, and driving towards a circular economy.
- A method that is economically beneficial as our production cost is significantly less than the market price of the products.