

For the project entitled for Team: SPWR – Solar Panels Waste Recycling

Silicon and thin-film solar panels cost-effective and eco-friendly recycling using SPWR process programs

Abstract: Introducing the **SPWR – Solar Panels Waste Recycling.**

The process of recycling silicon modules in Europe began more than a decade ago; however, the problem associated with most processes developed to date is that the recovery rate is not more than 80% and the value of the retrieved materials is not competitive compared to the originals. The SPWR process our team is developing can extract purer metals from solar cells. The metals would be worth +\$12.00 per module, that is enough to pay for the recycling, compared with about \$3.00 in the current PV high temperature recycle process. Our collaborative study with The Group of Research in Environment from Materials at the University of Texas in Austin, provides such evidence. Evidence that in the future, end-of-life solar panels using our SPWR process may prove to be a valuable secondary resource for a critical material in electric-vehicle batteries: Ultra-pure Nano-structured Silicon.

TECHNICAL ASSISTANCE REQUESTS: For the project entitled:

These technical assistance requests can come from National Labs, American Made Network (AMN) and/or private companies with NDA/NCA for each and all collaborations.

We need technical assistance in the evaluation of design and development of our current silicon and new thin-film CdTe/CIS SPWR process steps, including the mechanical recycling and chemical recycling steps.

We need a mechanical and chemical engineer expert or a team of engineers who have experience working in mechanical assemble and disassemble of silicon and thin-film solar panel and chemical reactions to extract different types of metals, semiconductors for improvement ideas and recommendations.

It would also be valuable to connect with experts in recycling metals and semiconductors using chemical reactions, and electroplating.

Mechanical Industrial engineering experts support will be needed when it comes to overall optimization of equipment layout, design, and characteristics.

Software engineering support to improve the equipment processes GUI and communication programming.

We will need supplies of silicon and thin-film (CdTe/CIS) waste solar panels for testing, evaluation and validation.