



NSF Convergence Accelerator's 2022 Cohort Phase 1 Award

Project Title

Securing Critical Material Supply Chains by Enabling Photovoltaic Circularity (SOLAR)

Awardee

Battelle Memorial Institute

Award/Contract

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Award Contract Type

R&D

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Principal Investigator

Morgan V. Evans

Volker@battelle.org

Co-Principal Investigator

Garvin Heath

NSF Funded Program

NSF's Convergence Accelerator

NSF Program Director

Linda K. Molnar

Track I: Sustainable Materials for Global Challenges

Convergence Accelerator

Directorate of Technology, Innovation

and Partnerships

lmolnar@nsf.gov

PROJECT ABSTRACT

Materials circularity for clean energy technologies is of utmost importance to ensure long-term sustainability and environmental equity, and to secure domestic supply chains for critical materials. Solar energy is key to achieving a clean energy transition, but many materials considered critical for solar energy production are not recycled at scale, and current manufacturing of photovoltaic (PV) modules is projected to account for up to 14% of the global carbon budget. The Securing critical material supply chains by enabling photovoltaic circularity or SOLAR project will create and promote an environment to enable full circularity of PV materials. The SOLAR project team, led by Battelle, will use convergence research principles to collectively forge the key missing links for circularity. The team will accomplish this by improving end of life (EoL) decision making to increase reuse and repair rates, converging advances in recycling and upcycling to reduce the cost of recycling and assess market demands for upcycled products, and modeling the end-to-end supply chain including logistics to identify and remove potential pinch points.

The SOLAR team brings together a broad array of organizations across several disciplines and sectors, led by nonprofit research and development (R&D) organization Battelle with a team composed of a university, a national laboratory, and a nonprofit institute. The SOLAR effort is advised by a utility, a solar trade association, solar panel recyclers and manufacturers, and a nonprofit focused on providing solar solutions to disadvantaged communities.

Using a multidisciplinary approach, use-inspired research, and innovation processes, the National Science Foundation's Convergence Accelerator provides an opportunity to accelerate solutions into practical application and provide a positive societal impact.