NSF Convergence Accelerator's 2022 Cohort Phase 2 Award

Project Title
ReCreateIt: Transforming Plastic Waste Through Community-Led Manufacturing

Awardee
re3D Inc.

Award/Contract #
49100424C004

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R&D

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PROJECT ABSTRACT

ReCreateIt: Transforming Plastic Waste through Community-Led Manufacturing will develop a more circular economy by deploying a sustainable manufacturing lab capable of repurposing plastic waste otherwise destined for a landfill. Partnered with the Austin Habitat for Humanity ReStores (AHFH), the ReCreateIt Gigalab will enable low-income homeowners to design sustainable home goods 3D printed directly from recycled plastic waste. The project will increase access to plastic recycling solutions while stimulating new job creation for historically underserved workers. The team will also research solutions for 3D printing with hard-to-reuse plastics.

ReCreateIt has set a goal to divert at least 10,000 lbs of plastic waste from landfills, train at least 20 workers in advanced manufacturing and engage and educate more than 500 community members. To create high value items from recycled plastic, project partner re:3D, Inc. will build a lab from a modified shipping container, and include within it a GigabotX 3D printer, a granulator, and material dryer. Georgia Tech will lead the implementation of an interactive design tool customers can use to select and customize home goods. The University of Texas at Austin and the University of Wollongong will deploy a sustainability dashboard which collects and communicates the environmental impacts of the project. Western Sydney University and the previously mentioned collaborators will engage in polymer research to enhance the printability of recycled materials while ensuring the structural integrity of 3D printed parts. The team will install the system on-site at AHFH, and train their workers to operate the lab and manufacture goods to share with the community. Research, metrics and data will be made accessible via a project-built public-facing website.

As the National Science Foundation's Convergence Accelerator is providing an opportunity to collaborate and make an impact beyond the scope of one entity alone, this project will provide the research and development foundations for community-led sustainable manufacturing and a template for transferring the approach to broader community stakeholders.