Technical Assistance Request

AM-STAR: Additive Manufacturing of Solar-Thermal Advanced Reflectors

Team

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National Labs

National Renewable Energy Laboratory (NREL)

We would like to partner with NREL for assessing the performance of our proposed heliostat mirror facets. NREL has facilities that can test the physical durability of our designs through impact testing to simulate hail strikes. They also may have the facilities to perform long-duration exposure testing under UV light to ensure adequate heliostat lifespan. Additionally, they have facilities to assess the performance of mirrors and solar equipment impacted by extreme temperatures, humidity, rain, freezing/thawing, and salt spray. NREL's Advanced Optical Materials Laboratory would provide us access to measurement capabilities that can test the heliostat mirror with extreme accuracy. NREL even has an Ultra-Accelerated Weathering System which can simulate 10 years of UV exposure in just 2 months.

Argonne National Laboratory (ANL)

A partnership with ANL would be beneficial to our concept in that we would be able to connect with world leaders in additive manufacturing (AM). They have state-of-the-art facilities for AM including a wide array of printers for polymer and for metal. They also have extensive material characterization equipment which would allow us to determine which materials would be ideal for our proposed bio-inspired structural application. The Materials Manufacturing Innovation Center at ANL specializes in polymer and composite additive manufacturing. In addition, they have facilities of the Center for Nanoscale materials that has many characterization tools that would help us optimize our materials and designs for the proposed AM-STAR heliostat mirror facet concept.