National Institute of Standards and
Technology
Department of Commerce

SBIR

SMALL BUSINESS INNOVATION

RESEARCH PROGRAM

PHASE I and PHASE II

AWARDS FOR FISCAL YEAR 2021

INTRODUCTION

Abstracts of Awards for Fiscal Year 2021 SBIR Program

Note: Certain non-ASCII characters may not be represented accurately in this document. In cases where there may be doubt, please direct your questions to sbir@nist.gov.

Fiscal Year 2021 List of Awardees

Award Number	Company Name	Phase
70NANB21H065	AI Solutions LLC	Phase I
70NANB21H062	ChemCubed LLC	Phase I
70NANB21H061	Colloidal Metrics Corp.	Phase I
70NANB21H066	Exum Instruments Inc.	Phase I
70NANB21H067	Glow Biosciences LLC	Phase I
70NANB21H060	Irradient Technologies Inc.	Phase I
70NANB21H069	Miami Valley Materials Testing Center	Phase I
70NANB21H135	Multiscale Systems Inc.	Phase I
70NANB21H070	Stealth Software Technologies Inc.	Phase I
70NANB21H068	Xallent LLC	Phase I
70NANB21H063	Zymosense Inc.	Phase I
70NANB21H129	Airflow Sciences Corporation	Phase II
70NANB21H134	NanoElectronic Imaging Inc.	Phase II
70NANB21H132	Poseidon Systems LLC	Phase II
70NANB21H131	RedShred LLC	Phase II
70NANB21H130	STF Technologies LLC	Phase II
70NANB21H133	WW Technology Group Inc.	Phase II

FY 2021 PHASE I AWARD

AI Solutions LLC (Lisle, Illinois) $99,585
Development of a Deep Learning Model for Predicting and Correcting Sintering Deformation of Printed Metal Components — a feasibility study for developing a baseline model for the deformation process so that deformations in 3D-printed parts can be predicted and proactively corrected.

ChemCubed LLC (Stony Brook, New York) $99,915
Nanocomposite Dielectric Material for Energy Efficient Manufacturing of Printed Circuitry — a nanocomposite material that would serve as insulating layers between circuits and masking material for soldering.

Colloidal Metrics Corp. (Mountain View, California) $100,000
Innovative Emulsion Polymerization Manufacture of Dual-Function, Nanoscale Calibration Spheres Over the Range of 100 to 400 nm Diameter — a size standard and particle concentration reference material for nanoscale particle size and concentration measurements.

Exum Instruments Inc. (Denver, Colorado) $99,916
An Innovative Mass Spectrometer to Simplify Materials Characterization for Additive Manufacturing — a tool for measuring the chemical properties of feedstock powders that would eliminate the need for external laboratory testing.

Glow Biosciences LLC (Columbia, Missouri) $100,000
Portable Optical System for Preclinical Monitoring of Biological Processes in Nontransgenic Animals — to apply portable bioluminescent technology to study important biological functions such as metabolite uptake and microbiota function.

Irradient Technologies Inc. (Cambridge, Massachusetts) $99,991
High Throughput Experimental Discovery and Optimization for 3D Nanofabrication of Optical & Photonic Materials and Devices — demonstration of a 3D nanofabrication platform for manufacturing optical and photonic devices.

Miami Valley Materials Testing Center (Tipp City, Ohio) $106,500
Novel Multilayer Material Adhesion Test for Additive Manufacturing — a research project to evaluate “push-pin testing,” which is used to characterize multilayer delamination in ultrasonic additive manufacturing.

Multiscale Systems Inc. (Worcester, Massachusetts) $100,000
Contact-Free Optical Metrology for Energy-Efficient Manufacturing of Mechanical Metamaterials — a feasibility study for a noncontact, optical measurement method for recycled PTEG plastic panels that would reduce power consumption during fabrication.

Stealth Software Technologies Inc. (Los Angeles, California) $99,989
ANISE: ANalytics and statistics with Information SEcurity — a prototype software platform that will protect the privacy of data from multiple sources, enabling secure statistical computations on datasets that cannot be shared.

Xallent LLC (Ithaca, New York) $106,500
Nano-Electro-Mechanical-Systems Probe for Thin Film Materials — a feasibility demonstration of a system for atomic imaging and sheet resistance characterization of thin films and semiconductor devices.

Zymosense Inc. (Ames, Iowa) $100,000
Automated Aqueous Two-Phase (ATP) Extraction for Low Cost and Scalable Sorting of Chiral-Pure Single Walled Carbon Nanotubes — proof-of-concept demonstration for automating the NIST-developed ATP system for separating chiral pure single-walled carbon nanotubes.

FY 2021 PHASE II AWARD

Airflow Sciences Corporation (Livonia, Michigan) $400,000
Advanced Measurement Probe System for Non-Nulling Stack Velocity Testing — a system capable of full-scale emissions testing of industrial plant smokestacks to allow them to more accurately quantify and minimize pollution emissions. During Phase II, Airflow will select a test site to prove out the system and verify operation.

NanoElectronic Imaging Inc. (Riverside, California) $400,000
A High-Precision Three-Dimensional Transmission Electron Microscope (TEM) Imaging System — a thickness mapping system that will extend the TEM's usual 2D submillimeter imaging resolution into the third dimension with comparable precision to provide a fully 3D, high-resolution imaging capability that could prove valuable for applications in the semiconductor industry.

Poseidon Systems LLC (Rochester, New York) $395,582
Portable Grease Characterization Device — a hand-held device that will allow sampling of grease to determine the amount of wear in critical bearing components of many types of machines. The device could reduce maintenance times while increasing understanding of the condition of

equipment used for power generation (including wind turbines), mining, oil and gas extraction, and more.

RedShred LLC (Baltimore, Maryland) $400,000
ENT: Extended Nestor Tagging — in Phase I, RedShred developed a cloud-based platform that enables natural language processing (NLP) and ranking of unstructured text data from manufacturing data logs. In Phase II the company will add enterprise management and analysis capabilities to accelerate adoption of NLP technologies in manufacturing.

STF Technologies LLC (Newark, Delaware) $400,000
High-Throughput, High-Pressure Small-Angle Neutron Scattering (SANS) Sample Environment — new system that will enable higher throughput at neutron facilities and provide both users and instrument scientists a uniform experience across facilities and SANS instruments.

WW Technology Group Inc. (Ellicott City, Maryland) $400,000
Model-Based Application of NIST Cybersecurity Standards — a digital tool that will help organizations better understand and apply existing, evolving and new NIST standards.