



## Project Introduction

The ability for a large-scale structure to autonomously mend damage is critical in engineering systems that are difficult or impractical to repair in service. This research program seeks to develop lightweight metallic components with the capability to sense damage and self-repair. Integral parts of this program include the exploration of novel concepts such as in-situ self-fluxing, integrating high performance shape memory alloy reinforcement as a crack closure and toughening agent and passive fiber optic sensing. This technology has the potential to significantly reduce cost, space and weight, and with the value-added characteristic of the ability to heal from damage for increased reliability, structures can be designed with unprecedented and revolutionary capabilities.

## Anticipated Benefits

This technology has the potential to significantly reduce cost, space and weight, and with the value-added characteristic of the ability to heal from damage for increased reliability, structures can be designed with unprecedented and revolutionary capabilities.

## Primary U.S. Work Locations and Key Partners

Organizations Performing Work	Role	Type	Location
The University of Florida	Lead Organization	Academia	Gainesville, Florida



Project Image Self-repair and Damage Mitigation of Metallic Structures

## Table of Contents

- Project Introduction 1
- Anticipated Benefits 1
- Primary U.S. Work Locations and Key Partners 1
- Images 2
- Project Website: 2
- Organizational Responsibility 2
- Project Management 2
- Technology Maturity (TRL) 2
- Technology Areas 3
- Target Destinations 3



## Images



**11480-1363264476937.jpg**

Project Image Self-repair and Damage Mitigation of Metallic Structures

(<https://techport.nasa.gov/image/1820>)

## Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

The University of Florida

### Responsible Program:

Space Technology Research Grants

## Project Management

### Program Director:

Claudia M Meyer

### Program Manager:

Hung D Nguyen

### Principal Investigator:

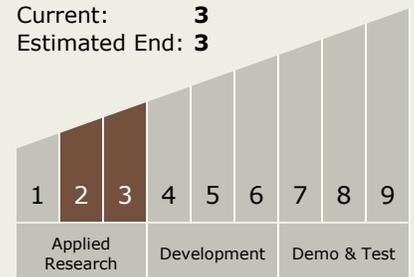
Michele Manuel

## Technology Maturity (TRL)

Start: **2**

Current: **3**

Estimated End: **3**





## Technology Areas

### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.4 Manufacturing
    - └ TX12.4.1 Manufacturing Processes

## Target Destinations

The Moon, Foundational Knowledge, Mars