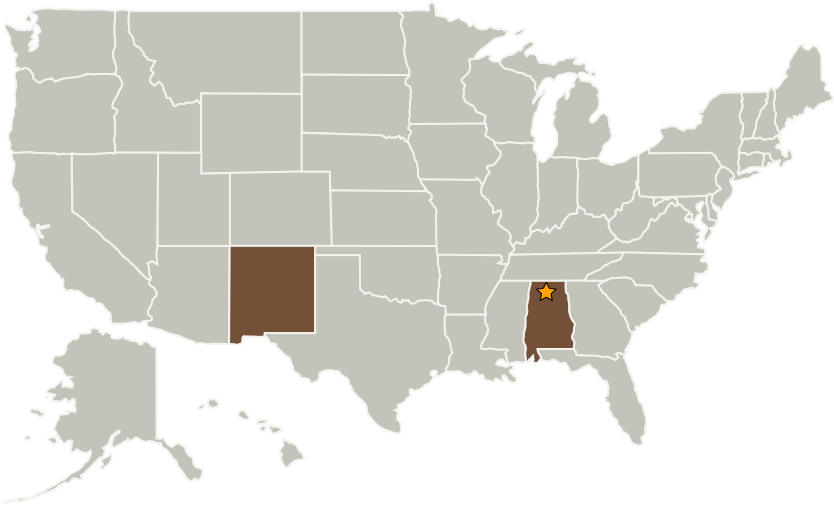
Light-Curing Structural Tape for In-Space Repair, Phase II

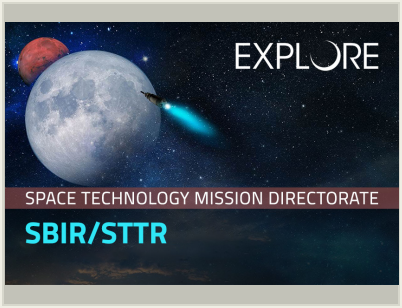
Completed Technology Project (2006 - 2009)

Project Introduction

NASA has numerous requirements for in-space repair capabilities to aid future missions beyond earth orbit. A subset of these requirements is adhesive patch materials that provide permanent or temporary repair of a wide variety of surfaces with minimal surface preparation and that can operate in the space environment. This work will result in the production of a repair kit for in-space applications that forms structural composite patches rapidly and safely with low power. The proposed kit will consist of glass fabric impregnated with a UV light-curing resin stored in a protective dispenser. Cure will be accomplished using a portable, robust light-emitting diode (LED) array. Surface cleaning materials may also be included in the kit. The proposed material will adhere to a variety of surfaces and cure under a variety of environmental conditions including vacuum. Such a repair kit will provide a versatile repair technology for a wide variety of applications, which eliminates having redundant repair approaches in many cases. This work will extend the knowledge base previously attained with the development of similar light-curing materials for rigidization of inflatable spacecraft. That prior work will greatly benefit the development of the proposed repair kit and reduce programmatic risk.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Adherent Technologies, Inc.	Supporting Organization	Industry	Albuquerque, New Mexico

Primary U.S. Work Locations	
Alabama	New Mexico

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  └ TX07.1 In-Situ Resource Utilization
    └ TX07.1.2 Resource Acquisition, Isolation, and Preparation