

Topic: N112-125

Tetramer Technologies, LLC

Fiber Optic Refractive Index Matching Material

Permanent fiber optic cable repairs on Naval aircraft usually require significant downtime and relocation of aircraft to a hangar bay or even Depot, Tetramer's TIMA fiber optic adhesive facilitates a permanent, in field repair option in the form of a mechanical splice. The actual repair steps themselves typically can be accomplished using the fielded Fiber Optic Repair Set (FORS) in about an hour, depending on the location of the repair and the existing environmental conditions. TIMA fiber optic adhesive requires no special storage conditions to maintain its excellent shelf life. Currently undergoing MIL qualification, TIMA was developed for avionics platforms but can easily be transitioned to shipboard and small network applications. Tetramer is a small business based in South Carolina which prides itself in being your partner in molecular architecture. Tetramer's team of experienced chemists help design custom solutions to materials problems and provide small scale high value material synthesis.

Technology Category Alignment:

Fixed Wing Vehicles (includes UAS)

Maintainability/Sustainability

Readiness

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SYSCOM: NAVAIR

Contract: N68335-19-C-0153



Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N68335-19-C-0153

WHO

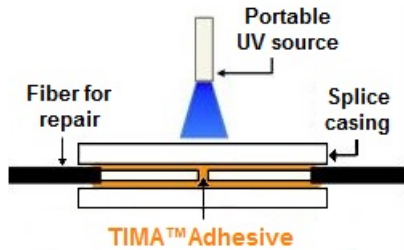
SYSCOM: NAVAIR

Sponsoring Program: AIR 1.0

Transition Target: F/A-18E/F, and E-2D

TPOC:
(732)323-1421

Other transition opportunities: All platforms which utilize small fiber optic networks including other government and commercial avionics platforms, shipboard, and land vehicles.



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WHAT

Operational Need and Improvement: Current fiber optic repair procedures utilize components that require refrigeration (to optimize shelf life) prior to use. There is a need for splice components that require no special storage conditions while providing at least a one-year shelf life.

Specifications Required: Navy aircraft platforms require splice components that can provide permanent, UV curable, low loss fiber optic mechanical splice. These components need to have a shelf life of at least a year, and require no special environmental storage considerations for maximum usefulness for Fleet usage.

Technology Developed: Tetramer has developed their Tetramer Index Matching Adhesive (TIMA) that is a UV curable fiber optic adhesive that does not require special storage considerations. TIMA has excellent bond strength and high thermal stability for use in producing permanent splices in fiber optic cables.

Warfighter Value: TIMA will increase aircraft availability, minimize supply infrastructure, and reduce repair costs. It will increase the availability of the splice capillaries compatible with the fielded Fiber Optic Repair Set (FORS) due to its extended shelf life of at least one year. Most importantly, no special storage conditions are required to maintain this shelf life.

WHEN

Contract Number: N68335-19-C-0153 **Ending on:** October 31, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Identification of adhesive candidates	N/A	Demonstrated long shelf life and high temperature stability	3	January 2013
Demonstration of bulk material performance	Low	Verified bulk adhesive properties against applicable MIL specification	4	January 2015
Demonstration of splice compatibility	Med	Validated adhesive performance within a breadboard splice system	5	April 2015
Qualify adhesive for transition to fleet	Med	Validate performance in a field ready splice system	6	October 2020

HOW

Projected Business Model: Tetramer intends to supply prefilled splice components to be listed on the Qualified Parts List (QPL). Manufacturing can be done in house with existing equipment on a small scale with potential for in house automation for larger scale production.

Company Objectives: Tetramer's objective is to identify interested government and commercial partners to bring TIMA to market in the shortest time frame.

Potential Commercial Applications: TIMA was developed for avionics platforms and would transition well to commercial aircraft use. It can be used in any small fiber optic network with feasible impact in the automotive sector as well as fiber to the premises and fiber to the desktop.