

Department of the Navy SBIR/STTR Transition Program

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ONR Approval #

Topic # N131-071

High Density, Multi-Layered Nosedtips for Hypersonic Projectiles
Plasma Processes, LLC

WHO

SYSCOM: ONR

Sponsoring Program:

Transition Target: High Velocity Projectiles

TPOC:

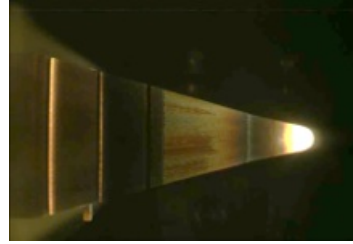
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Other transition opportunities:

Hypersonics, Long range Munitions

Notes: A system representative nosetip configuration was tested in a simulated flight environment using an arcjet with an example run displayed in the image above. Note the nosetip maintaining a smooth radius during test.



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WHAT

Operational Need and Improvement: Development of high-speed weapons systems for long-range surface fire support, missile intercept and conventional prompt global strike applications is of interest to the Navy.

Specifications Required: The nosetip will require a small nose radius to minimize drag, be of sufficient density in order to balance the center of gravity, handle extreme heat loads in highly oxidizing conditions, survive >30kG axial mechanical loads, >10kG transverse balloting loads, and thermal shock from surface temperature rise of 2000C/sec.

Technology Developed: This effort developed a novel coating solution to provide oxidation protection to high density nosetips utilized for high velocity projectiles. The program also developed an innovative test methodology to test the technology in a relevant environment.

Warfighter Value: This technology will enable surface fire support range and velocity increases.

WHEN

Contract Number: N00014-15-C-0050 **Ending on:** April 30, 2020

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Component Testing in a Representative Environment	N/A	Post-test sample evaluation	5/6	3rd QTR FY19

HOW

Projected Business Model: Plasma Processes will serve as a coating service provider for this technology.

Company Objectives: Plasma Processes strives to be an industry leader in providing coating solutions for extreme environment applications. Plasma Processes seeks to transition this technology to a long range munition or hypersonic program of record.

Potential Commercial Applications: Plasma Processes multi-layered technology is applicable to leading edges of hypersonic vehicles, rockets nozzles, combustion liners, jet vanes, and other applications that may experience extremely high thermal gradients.

As such, it is suitable for transition to the commercial rocket and related aeroengine applications and will enable low-cost access to space. In addition, this technology utilizes fabrication methods that enable advanced component designs and have the potential realizing significant cost savings when compared to existing state of the art materials systems.

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