

Mold Shields, Inc.

C-1 PROJECT ABSTRACT:

A novel processing technique focusing on the demonstration of Laser-Assisted Machining for the production of light weight corrosion resistant parts used in weapon systems is proposed. Mold Shields, Inc and Purdue University jointly intend to analyze and identify gaps in new capabilities needed for future weapons, assist in the development of the next generation of weapons using the key technology process. Laser-assisted machining, developed at Purdue University, offers a novel, cost-effective way of creating parts that have complex shapes made of advanced ceramic and metal matrix composite materials used for weapon systems.

This program objective will be a three-year joint effort by Mold Shields, Inc. and Purdue University for research and technical support. The work to be performed is described in the Statement of Work (SOW) by Mold Shields Inc. dated August 26, 2009 (BAA- W15QKN-09-R-0266) for assisting US Army ARDEC Advanced Materials Branch and Organic Materials and Corrosion Branch with the abatement and the prevention of corrosion of weapon components and other Army Materials. Mold Shields, Inc. and Purdue University will develop ceramic and metal matrix composite (**combinations of ceramic and alloy materials**) components using Laser-Assisted Manufacturing (LAM) technology, which could be used to greatly reduce the corrosion burden while reducing the components weight simultaneously.

The approach is *not* to treat the corrosion as an after-the-fact maintenance issue; the goal is to use advance materials to avoid the corrosion abatement. Our plans are to develop products and processes that can reduce the weight of various weapon system components or extend performance either in terms of life, ballistics, or protection of corrosion. Materials that will be used in the research will also be resistant to corrosion and the effects of environmental degradation.

The expected outcome is to provide low-cost machining of precision ceramic parts, specifically combinations of ceramic and alloy materials, bushings, cylinder rods, and expanding to complex shapes. To provide savings in repairs, extend components life, and provide for higher operating temperatures, and a weight reduction of each new component, Mold Shields, Inc. and Purdue University will design, fabricate and install a beam guidance system for focusing the laser beam on the workpiece, to soften the work piece before it encounters the single point cutting tool. The system will be installed in a CNC machining center, equipped with water-cooled CBN or diamond tools.



DEPARTMENT OF THE ARMY
U.S. ARMY CONTRACTING COMMAND
JOINT MUNITIONS AND LETHALITY CONTRACTING
CENTER
PICATINNY ARSENAL, NEW JERSEY 07806-5000

25November 2009

Reginald Phillips
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Re: White Paper entitled "Laser-Assisted Manufacturing of Ceramic Materials Technologies for Weapon Systems" submitted in response to BAA #W15QKN-09-R-0266

Dear Mr. Phillips,

Thank you for your submission of the White Paper referenced above. Reviews of all white papers submitted in response to this Broad Agency Announcement (BAA) were accomplished by government technical personnel and each paper was subsequently assigned one of the following three ratings:

Promising
Acceptable
Not of interest at this time

The government has thoroughly reviewed the content of your white paper and has assigned it the following rating of **Acceptable**.

In support of this rating our technical evaluation team determined that your submission was in line with the stated technical category Materials Focusing on the Demonstration of Laser-Assisted Manufacture for the Production of Light Weight Corrosion Resistant Parts for use in Weapon Systems.

If you have received a rating of Promising or Acceptable, you are encouraged to submit a full technical and cost proposal on all or part of your white paper submission. However, this encouragement does not assure a subsequent award.

Any offeror may submit a full proposal even if its white paper was not identified as being promising or acceptable. However, if the white paper is identified as not being promising or acceptable, it is most likely that no award will be made.

If you are intending to submit a proposal, please refer to the BAA for instructions for submittal of full proposals. Please submit your proposal no later than 30 December 2009, 4:00PM.

Sincerely,
//signed//
Timothy R. Jensen
Contracting Officer