

USACA NEWSLETTER

WASHINGTON OPERATIONS REPORT



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QUARTER 4, 2009

USACA PARTICIPATES IN AFRL FORUM ON SiC FIBER SUPPLY

A forum was held at the Air Force Research Lab in Dayton, Ohio on December 15, 2009, bringing together the community of users, manufacturers, and government sponsors with vested interest in SiC fiber based CMCs for use in gas turbine and aerospace structures. Approximately 75 individuals were present to discuss the issues surrounding the projected applications for SiC fiber, requirements for these fibers, and their availability.

The forum sought to answer whether currently available SiC fibers have properties that satisfy customer requirements and if not, what could be done to insure they are available for future programs. Charles Stevens, Chief AFRL Propulsion Lab Turbine Branch, and Joseph Grady, Acting Ceramics

Branch Chief, from NASA Glenn discussed some of the turbine propulsion needs of the U.S. government. These government agencies are currently seeking advanced materials that increase the speed, range, lifetime, and fuel efficiency of commercial and military aerospace systems.

There is also a need to develop materials to withstand temperatures well beyond that which can be satisfied by SiC fibers available today. Kenneth Davidson, AFRL TPS Materials lead, and Anthony Calomino, TPS lead from NASA Glenn addressed the thermal protection needs for their respective agencies. The government is seeking fibers capable of withstanding temperatures up to 3000°F. They would like to reach this level by mid-

2012.

The forum also addressed concerns with the cost of CMC's. The U.S. government is pursuing technologies that can provide the desired increase in performance with minimal added cost when compared to superalloys being used today. Values in the range of 2X were quoted by the gas turbine engine community while values of 10x+ were quoted by the Air Force as being more common today. While fiber is a contributor to the high cost, it was generally believed that CMC processing is the leading contributor and has been the primary focus of DOD Mantech investment.

The forum then proceeded to discuss issues regarding the industrial base. Based on

an industrial base assessment performed by Todd Warren for AFRL in 2007, it was concluded that SiC fiber demand would exceed capacity by 2015. This assessment was updated in 2008 and it was determined that DOD demand had dropped by over 50 percent in the near term due to changes in planned acquisition. During this update, Mr. Warren concluded that nuclear power applications

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FY2010 DEFENSE APPROPRIATIONS

Information on the FY2010 Bill can be found on page 4

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USACA MEETS WITH OSD INDUSTRIAL POLICY OFFICE ABOUT CCAP



USACA representatives met on December 7 with the Director for Industrial Policy (IP) in the Office of the Deputy Under Secretary of Defense (Acquisition and Technology), Mr. Brett B. Lambert to discuss the Ceramic Composites Affordability and Producability Initiative (CCAP). Mr. Lambert, who

began his position in 2009, serves the Department of Defense by advising the Department on all matters relating to the defense industrial base.

Mr. Lambert spoke a few days earlier at the Defense Manufacturing Conference

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LAMBERT (CONT. FROM P. 1)

about the importance of tier three and tier four suppliers to the defense industrial base. CCAP fits nicely with many of the objectives Mr. Lambert listed at DMC for the IP office, including more active engagement with the supplier community on manufacturing and producibility. In the meeting on December 7, Mr. Lambert reiterated that his charter is to get out in front of DoD on producibility in order to reduce the cost and schedule risk for DoD acquisition efforts.

Prior to joining IP, Mr. Lambert served as a Managing Director of Civitas Group providing strategic advice for clients in the national security sector. Mr. Lambert has also worked for DFI, USAID, and CSIS, and also as an independent journalist. In his strategic advising positions, he has assisted clients target and gain access to new and evolving markets.

During the meeting, Mr. Lambert and the USACA representatives discussed some of the issues currently facing the ceramics and composites industry. Those present shared their ideas about the ways CMCs are supporting the Defense community, and held a dialogue on how best to proceed forward. Mr. Lambert asked several questions that alluded to an interest and understanding of the industry.

USACA will continue to work with Mr. Lambert on CCAP and other ceramic and advanced materials industrial base interests.

34TH ANNUAL CONFERENCE ON COMPOSITES MATERIALS AND STRUCTURES

When: January 24-29, 2010

Where: Radisson Resort at the Port
Cocoa Beach/Cape Canaveral, FL

Purpose of Conference: The conference provides a forum for ITAR controlled information relating to advanced materials including ceramics, metal and carbon matrix composites and their constituents.

Host: United States Advanced Ceramics Association

Registration: The registration cost is \$450. Please register on-line [here](#).

Please visit the [USACA website](#) for the latest update on the 2010 CMS Conference.

ITAR EXPO:

There will be an ITAR Restricted ex-

hibit area on Jan 25-26. Cost to exhibit is \$495 plus electricity. Please visit the [EXPO web page](#) for more information and registration.

Sponsorships

Promote your company by being a sponsor at one of our breaks during the Cocoa Beach Conference. A sign with your company name and logo will be posted during your break sponsorship.

- Refreshment Morning Break Sponsorship — \$400 each (4 available)
- Refreshment Afternoon Break Sponsorship — \$400 each (4 available)
- Continental Breakfast Sponsorship — \$600 each (4 available)

For more information please contact Shelley Luehring by

[Click here to be a sponsor.](#)

GOVERNMENT FUNDING OPPORTUNITIES

The U.S. Government has several funding opportunities available for advanced ceramic technologies ranging from those in the theoretical phase, to those ready for major scale-ups. These opportunities can fund research, development, manufacturing process innovations, and/or increased production capacity.

Broad Agency Announcements (BAAs) are those that do not target one specific solution, but aim to develop knowledge or technologies in several areas. The government identifies an area of interest or a problem and companies propose separate approaches to satisfy the announcement.

One particular BAA published May 1, 2009, by the Naval Research Lab (NRL) outlines several opportunities within their Materials Science and Component

Technology Directorate.

Within the Ceramics and Rapid Prototyping Section of Multifunctional Materials Branch, NRL expressed interest in the following topic areas:

- Electronic Ceramics
- Ceramic Composites
- Desktop Design of Ceramic Composites via Controlled Structure Technology
- Structural and Functional Prototyping via Solid Freeform Fabrication
- Functional Ceramic Materials Development Ceramic Capacitor and Tunable Dielectric Formulation
- Minimization of Crack Growth in Glass

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MATECH/GSM JOINS USACA IN 2007

USACA welcomes MATECH Global Strategic Materials. Since MATECH was founded in 1989, it has been recognized as a world class research and development laboratory in the areas of glass, ceramic, and high temperature ceramic composite material development. MATECH was founded by Dr. Edward J. A. Pope in 1989. MATECH Global Strategic Materials, Inc. was co-founded by Dr. Pope and Mr. Kenneth M. Kratsch.

MATECH has emerged as the premier developer of high temperature ceramic composites and fibers for missile and aircraft components using pre-ceramic polymers. The company has joined USACA with hopes of leveraging the organization's prestige in the aircraft engine and energy industries to build relationships with key players in those areas.

MATECH is happy to be part of the USACA team, and appreciates the organization's education and enhancement of the importance of high temperature ceramics on Capitol Hill.

Again, we welcome MATECH to USACA and look forward to working with them.

MATECH GSM
Global Strategic Materials

CONFERENCE CALENDAR 2010

January 20-22, 2010

[Electronic Materials and Applications 2010](#)

Royal Plaza in the Walt Disney World Resort, Orlando, FL

January 25-28, 2010

[34th Annual Composites, Materials, and Structures Conference](#)

Radisson Resort at the Port, Cocoa Beach / Cape Canaveral Florida

February 21-24, 2010

[Materials Challenges in Alternative & Renewable Energy 2010](#)

[Call for Papers!](#)

Hilton Cocoa Beach Oceanfront, Cocoa Beach, FL

April 29-30, 2010

[Photoluminescence in Rare Earths: Photonic Materials and Devices \(PRE 2010\)](#)

Florence, Italy

June 13-16, 2010

[Electroceramics XII](#)

Trondheim, Norway

October 17-21, 2010

[Materials Science & Technology 2010 Conference & Exhibition](#)

[Call for Papers!](#) Due in before March 15, 2010

ACerS 112th Annual Meeting

George R. Brown Convention Center, Houston, TX

November 14-18, 2010

[International Congress on Ceramics \(ICC3\)](#)

Osaka International Convention Center, Osaka, Japan



DOD FUNDING (CONT. FROM P. 2)

The ceramic composites topic area presents an opportunity for USACA members, as it seeks to study and enhance CMCs for the Navy. Past proposals have led to:

- A BN fiber debond coating that allows transfer of the load to the stronger fiber but prevents the fiber from bonding strongly to the matrix
- A thermochemical treatment

that improves the strength of polymer-derived SiC fibers

- CMCs with strengths approaching 1000 MPa
- A technology for mesostructure tailoring of CMCs through controlled structure technology that allows tailoring of the CMC mechanical behavior by dictating the crack/structure interaction.
- Failure-resistant ceramic laminate structures using inexpensive phos-

phate technology to develop an all-weather Mach 5 missile radome model.

For more information on this BAA, contact Barry Bender, Barry.Bender@nrl.navy.mil, 202-404-1532

SECOND ROUND OF ARPA-E PROPOSALS DUE JANUARY 15



The Department of Energy ARPA-E issued in December a call for concept papers on advanced technologies in three ar-

reas: Electrofuels, Innovative Materials & Processes for Advanced Carbon Capture Technologies (IMPACCT), and Batteries for Electrical Energy Storage in Transportation (BEEST). Concept papers are due to ARPA-E by January 15, 2010. DoE Secretary Chu and Commerce Secretary Gary Locke announced that \$100 million in Recovery Act funding will be made available to fund this round of ARPA-E awards. \$400 million was appropriated to ARPA-E in the American Reinvestment and Recovery Act, so this second round of funding along with \$137 million awarded in round one leaves approximately \$140 million still available for future awards (we understand DoE is retaining \$20 to \$30 million for internal use).

The new ARPA-E solicitation does not exclude foreign-owned U.S. corporations from participation in round two funding. USACA joined with other industry associations to protest restrictive language used for the initial ARPA-E solicitation. The new solicitation language on foreign-owned company participation is as follows:

A.1. PARTICIPATION BY FOREIGN ENTITIES

Foreign-owned entities may participate under this FOA as a recipient or sub-recipient if the foreign owned entity is incorporated within the United States. A minimum of 90% of the work, as defined by total project costs, must be performed on U.S. soil, which includes the United States proper and its territories. U.S. preference and manufacturing requirements under the Bayh-Dole Act, 35 U.S.C. 200-212, and DOE regulations and policies will apply to all recipients and sub-recipients. Agreements resulting from the FOA will require recipients to promote manufacturing within the U.S. of products that embody the technology(ies) developed with ARPA-E funding.

Information on the ARPA-E solicitation can be found at: <https://arpa-e-foa.energy.gov/>

FY2010 DEFENSE APPROPRIATIONS BILL

The FY2010 Defense Appropriations Conference report came out on December 15. The Bill is expected to be signed shortly by the President. The Conferees provided a total spending amount of \$636.3 billion for FY '10.



Representative Obey and Murtha

There were no significant changes in the conference report to the ceramic related programs highlighted at the October USACA meeting in Washington, DC. In general, congressional interest items were funded at 80% of the value originally provided in either the House or Senate versions. The Bill included spending for the F-35 Joint Strike Fighter totaling \$6.8 billion. Of those funds, a total of \$465 million was appropriated for the continued development of an alternative engine.

Contact Information

SMI, Inc.
1020 19th Street, NW
Suite 375
Washington, DC 20036
www.advancedceramics.org
USACA@strategicmi.com
202-467-5459
Ted Lynch, Executive Director

HIGHLIGHTS FROM FALL MEETING IN WASHINGTON, DC

The 2009 Fall USACA Meeting was held on October 29, 2009 at the Capitol Hill Club in SE Washington, DC.

The meeting opened with a discussion on the FY10 Defense Appropriations bill, as well as an update on the Recovery Act solicitations. Many of the budget highlights were acknowledged, including various increases and decreases in current programs.

Glen Mandigo led a discussion on association activities including the Nuclear Cladding congressional language, the Air Force Thermal Protection System program planned for FY10, the January 2010 CMS meeting at Cocoa Beach, updating the USCA bylaws, Industry Survey, and reauthorization of the Defense Production Act.

Rob Sonenthal talked about updating USACA bylaws in order to simplify them and clear up inconsistencies. Rob reviewed the major issues with the current bylaws. The Executive Committee will work with Rob to make decisions on the proposed changes and a new draft will

be circulated to USACA members for review in advance of a vote at the USACA Spring Meeting

Mark Gordon provided a status report on the industry survey. As of October 28, response was just over 50% of USACA members, which is slightly lower than sought. He also provided briefing on the Defense Production Act Title III program.

Mr. Mandigo provided a 2010 Program Plan. The Plan highlights Market Development, Federal Program Advocacy, Industrial Representation, Cocoa Beach Conference, and Membership Services as key areas. Finding support for ceramic materials database and standards is a priority for 2010.

USACA members can access afternoon speakers' presentations on the USACA website. Speakers included:

- John Koenig from Southern Research Institute
- Kai Koizumi, Office of Science and Technology Policy

Outlook for Federal Research and Development

- Jim McCauley, Army Research Laboratory; Armor Materials
- Paul Piscopo, Piscopo Group; CCAP update
- Joseph Eaves, Legislative Director for Rep Tonko; Outlook for HR 3029 Promoting Research on Gas Turbines
- Joe Grady, NASA Glenn Research Center; Gas Turbines



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SiC FIBER (CONT.)

could become the largest customer for SiC fiber with a projected demand approaching 14 metric tons by 2023. Details of the study were not made available to the audience due to their proprietary nature.

The forum then allowed time for open discussion where industry representatives discussed non-US supply, quality, and timely availability of SiC fibers. The user community stated that the ability to specify non-US materials in weapon platforms is becoming increasingly challenging and in many cases resulting in

the selection of alternatives having inferior capability to that available with CMCs. It was stated that concerns with fiber quality exist and it is believed that a US fiber industrial base would be easier to work with to solve these problems. It was also stated that projects are becoming increasingly time critical and delays in the availability of fiber are of concern.

SiC Fiber supply is an important issue for the U.S. government and their suppliers, with both government and industry professionals seeking the most practical path forward. The AFRL SiC Fiber Forum was a start to a long overdue dialogue which should ultimately allow for a more

meaningful relationship between industry and government. As a collective voice of the industry, USACA will continue to advocate for a stable supply of SiC fibers that will be required to sustain continued growth of the CMC industry.

Presentation materials and an attendance list will be made available to USACA members.

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press releases!](#)