TYPE: ACTION DOCUMENT NUMBER: 9202422
ORIGINATOR: 02 STATUS I DIRECTORATE STATUS
****

FROM: BLOCH, Erich: COUNCIL ON COMPETITIVENESS

AUG 27

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 08/14/92

SUBJECT: HE IS FORWARDING A COPY OF THEIR REPORT ON THE ADVANCED MATERIALS AND PROCESSING PROGRAM. THEY LOOK FORWARD TO DR. BROMLEY'S RESPONSE TO THE DOCUMENT.

****
DIRECTORATE ASSIGNED: PHYSICAL SCIENCES
STAFF ASSIGNED:

ACTION REQUIRED: REVIEW FOR DAB
STAFF ACTION:

****
SENDER'S DUE DATE:
OSTP DUE DATE: 09/02/92 STAFF DUE DATE
DATE COMPLETED: DATE COMPLETED/DEPT: 12/22/92

****

COPIES TO: D. Allan Bromley

****

WHITE HOUSE TRACKING #: CONTACT PERSON:
PHONE: EXT:

REMARKS: REASSIGNED TO PS 08/26/92.

Dr. Esb responded; enclosed copy of FY93 Implementation Ob

OSTP RECEIVED: 08/19/92 DEPT RECEIVED:
FILE: P-INDUSTRIAL-ECONOMIC COMPETITIVENESS

CENTRAL FILES: PS-AMPP Feeset

Council on Competitiveness

August 14, 1992

Allan Bromley
Assistant to the President for Science
and Technology and Director
Office of Science and Technology Policy
Executive Office Building
17th and Pennsylvania Ave., NW
Washington, DC 20506

Dear Allan:

As you know, the Council on Competitiveness has been working to support and provide private sector input to the Administration's interagency technology initiatives. To provide input to the Advanced Materials and Processing Program (AMPP), the council brought together a diverse ad hoc group of materials experts including people from large and small companies, universities, and labor unions, as well as other experts. This group met several times over the last year to review and comment on the program.

The enclosed report reflects this group's comments on the AMPP. In general, the group strongly supports the initiative, but believes that the initiative must move on to a next phase, with much greater participation and cooperation of the public and private sectors. In addition, the report recommends strengthening the program's focus in areas that will aid the commercialization of new materials, and identifies technical areas that need strengthening, and recommends ways to measure the success of the AMPP.

We look forward to your response to this document, and look forward to working with you over the next year.

Sincerely,

Erich Bloch
Distinguished Fellow

Enclosure

900 17th Street, NW • Suite 1050 • Washington, DC 20006
(202) 785-3990 • FAX (202) 785-3998

Council on Competitiveness

Ad Hoc Committee on Materials

Comments on the Advanced Materials and Processing Program

Introduction

This report comments on the Advanced Materials and Processing Initiative (AMPP), the Federal government's interagency program in materials science and technology. This initiative for the first time seeks to coordinate materials R&D across ten Federal agencies and strengthen the areas that are the highest priority. The Initiative has a proposed FY 1993 budget of $1821 million, an increase of $162.8 million over the FY 1992 base.

Advances in materials and processing are a vital area for the country, driving improvements in products and processes in virtually all sectors of the nation's economy, and the Council on Competitiveness strongly supports this initiative. The Council believes that bringing the diverse R&D activities across the Federal government into a more coherent program is an important task and commends those in the government who are working towards this goal. Furthermore, the focus on materials processing in the AMPP addresses an area where the U.S. has been found to be relatively weak compared with Japan and Europe.

The Council on Competitiveness has been working to make the private sector a partner in the program. It brought together an ad hoc group of materials experts, drawn from the Council's diverse membership of large and small companies, universities, and labor unions, as

well as other outside experts. This group has met several times to review the program. The following comments and recommendations to strengthen the program are based on the discussions of this group.

Comments on the Program

The initiative has made much progress. It provides a better synopsis of Federal materials R&D than was available before, and it is now easier to determine who to contact in the Federal government in order to find information or explore cooperative activities. The initiative has drawn greater attention to the importance to the nation of advanced materials and has helped strengthen the links between the people working in this field.

The initiative, however, must now move to a next phase to reach its potential. It is currently largely a collection of pre-existing Federal R&D programs in materials. It should become a coordinated national program of materials R&D, with the full participation and cooperation of the public and private sectors.

Much of the attention in the first phase of the initiative has been on building better linkages between the Federal materials R&D program, new opportunities in materials, and technology development in the private sector. These linkages need to be continued to be expanded and improved. In the new programs under the AMPP, the linkages to the private

sector are uneven -- well established in some proposed enhancements and weak in others. Moreover, the focus on improved linkages should extend to the base program, which comprises over 90 percent of the AMPP.

A further problem is that the program plan does not explain how the R&D in the base programs of the agencies is critical to the long-range needs of government and the private sector. It should better explain how materials R&D conducted by the agencies are important to national goals. It should also identify important linkages between advanced materials technologies and other critical technologies that have high technological and economical leverage for advanced product developments.

Many of the materials R&D programs that have the strongest linkages to national needs and to the private sector, and which the private sector believes are most valuable, are not included in the initiative. These include the materials R&D conducted under SEMATECH and the Department of Commerce's Advanced Technology Program. These programs should be described under the initiative, even if it is not desirable to count them in the AMPP budget.

Although the Administration has sought private sector input to the AMPP, the level and timeliness of information provided to the private sector has not been sufficient to make the private sector a full participant in the process. This dialogue must be improved. The central challenge in making the initiative achieve its potential is to build more productive links between government research programs and the private sector. This requires a new partnership with a

stronger flow of information between both partners about future opportunities, needs, and research results. It further requires government-private sector cooperation to develop joint plans and programs. In addition, existing programs that have strong linkages, such as NSF's Engineering Research Centers and Science and Technology Centers, and NIST's Advanced Technology Program should be strengthened.

Recommendations

1. Increase Private Sector Participation in the AMPP

Much greater interaction with the private sector is essential to making the AMPP achieve its potential. This interaction is necessary to develop a consensus on the future market opportunities for new materials and to determine the appropriate division of effort among the private and public sectors required to realize those opportunities. The interaction should be expanded at the policy level, at the level of determining the direction of specific programs, and at the level of industry, university, and government researchers.

At the policy level, the Council on Competitiveness, along with other industry and professional associations, will continue to provide informal advice. At a more detailed level, it is necessary to establish a mechanism by which private sector groups and government (1) develop a consensus on their long range technology and R&D needs in specific areas, and (2) develop plans with appropriate roles for government, industry, and academia to meet those needs. The appropriate mechanism may be for committees of private sector experts representing

diverse parts of the private sector to work with government interagency task groups in specific areas of materials, on either a formal or ad hoc basis. The Council will work with government, industry associations and professional societies to develop this mechanism.

At the level of individual researchers it is necessary to build better working relationships between government-funded researchers and industry. As one action to encourage this, we recommend the establishment of a fellowship program to fund graduate students in materials who will spend time in university, government, and industrial research laboratories.

2. Strengthen the Federal Role in Promoting Commercialization

There is currently an insufficient linkage between the R&D programs in the AMPP and the needs of industry. Government-funded research does not automatically contribute to technological leadership by U.S. companies and the national investment in R&D will pay off only if technologies are commercialized. The AMPP needs to devote greater priority to programs that facilitate the commercialization of technology. These needs should be recognized in selection criteria used for grants and contracts awarded under the program.

An increased emphasis on commercialization is particularly critical in view of the declining role of the Department of Defense (DOD) in the commercialization of advanced materials. DOD has provided both R&D funding and the market for the initial use of many materials -- providing both a technology push and a market pull -- and this helped reduce the

cost and risk of further commercializing the technology. As the defense market shrinks, this mechanism is rapidly weakening and new actions to facilitate the commercialization of technology are critical.

Although many of the actions necessary to improve U.S. industry's ability to commercialize technology, such as improving the macroeconomic environment or creating a more favorable tax policy for investment, are clearly outside of the scope of the materials initiative, several actions could be within the scope of the initiative. These include:

- Make government agencies better and more proactive consumers of advanced materials. Infrastructure and advanced systems projects could be particularly promising markets for many materials.

- Increase support for projects and prototype test beds to demonstrate the feasibility of new materials and processes, and their application to specific products.

- Provide greater support for the development of test methods, standards, and databases on materials performance and characteristics.

Each of these would either reduce the market risk or the technological risk that a company faces in commercializing a new material or process.

3. Strengthen Key Areas of the AMPP

The following areas in the AMPP need higher priority.

Materials Processing Science. Within the AMPP's synthesis and processing category, most of the fundamental research, which is conducted in universities, is focused on synthesis, and most of the applied research and development, which is conducted in industry, is focused on process development. Fundamental research in universities on materials processing is weak and needs much greater emphasis.

Education and Human Resources. Skilled people form the core of a national competence in materials. At only 1.5 percent of the AMPP, this area is underfunded. As described above, a fellowship program could simultaneously be used to strengthen the interaction between industry, universities, and national laboratories.

Construction and Infrastructure Materials. Construction and infrastructure are among the largest users of materials. Federal, state, and local governments are major users of these materials. Although these are typically high volume-low cost materials, and not considered the "most advanced," there are significant opportunities for greatly increasing the performance and reducing the life cycle cost of new infrastructure. Relatively little Federal R&D is devoted on these areas. Furthermore, linkages between Federal and State initiatives to develop codes and standards for the introduction of improved materials into new infrastructure construction are relatively weak.

Environmentally Compatible/Renewable Materials. Environmental trends are likely to provide a strong demand for these materials, but Federal R&D is small and is not coordinated with the regulatory policymaking that will provide the demand for many of these materials. Greater investment is needed to develop recycling technologies for advanced materials.

Metrics to Measure the Success of the AMPP

There is no single metric to measure the effectiveness of the AMPP in getting technology to the private sector. We suggest using a variety of metrics that collectively will provide an indicator of the success of the AMPP. Among these are:

- The number and value of licensing agreements.
- The amount of private sector funds committed to cooperative R&D with the government and universities.
- The number of CRADAs executed and funded.
- The number of patents.
- The number of papers co-authored with private-sector scientists and engineers.

- The U.S. competitive position in materials and processing technologies, as measured in various comparative studies.

- The world market share of U.S. companies in advanced materials.

- The number of jobs created in start-up companies resulting from Federally funded materials R&D.

- The number of students in materials graduate programs, and the number of materials tracks in undergraduate engineering schools.

These metrics collectively will indicate whether the initiative is contributing to the health of U.S. materials R&D and providing a payoff to the economy.

AD HOC COMMITTEE ON MATERIALS

Chairman
Erich Bloch
Distinguished Fellow
Council on Competitiveness

Staff
David Cheney
Senior Associate
Council on Competitiveness

Members

David Arnold
Vice President and Chief Technology Officer
Kennamental, Inc.

Bill Appleton
Associate Director
Oak Ridge National Laboratory

Sumner Barenberg
Vice President
Chief Technology Officer
Tenneco Company

Arden Bement
Vice President of Science and Technology
TRW, Inc.

Gary Boerman
Corporate Director
Materials Engineering
FMC Corporation

Praveen Chaudhari
Research Staff Member
IBM Research Division
T.J. Watson Research Center

Merton C. Fleming
Head, Department of Materials, Science and Engineering
Massachusetts Institute of Technology

Robert A. Laudise
Director, Physical and Inorganic Chemistry Research Laboratory
AT&T Bell Laboratories

R.A. Livigni
Vice President and Research
GenCorp

J. David Litster
Associate Provost & Vice President for Research
Department of Physics
Massachusetts Institute of Technology

Marc Newkirk
President and Chief Executive Officer
Lanxide Corporation

Richard K. Quinsberry
Vice President of Research
E.I. DuPont De Nemours & Company

John Warner
Vice President
Boeing Commercial Airplane Group

James C. Williams
General Manager
Materials Technology Laboratories

Klaus M. Zwilsky
Director, National Materials Advisory Board
National Research Council

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

December 22, 1992

Dear Erich,

I am pleased to send you the enclosed 1993 Implementation Plan for the FCCSET Advanced Materials and Processing Program.

The Implementation Plan commits us to planning activities and implementation mechanisms that will strengthen the program and forge new links between the Federal and private sector R&D agendas. The plan also defines measures of performance, including an extensive set of technical milestones, which will serve as indicators of achievement.

Despite the disappointing FY 1993 appropriations results, we intend to press forward with the planning and implementation activities set forth in the plan. I am convinced that these activities will have a significant and beneficial effect on the program that will help compensate for the slower rate of technical progress achievable with reduced appropriations.

All of us who have worked on the AMPP are indebted to you and to the Council on Competitiveness Ad Hoc Committee on Materials for your support and your thoughtful recommendations, many of which are incorporated in the Implementation Plan.

Sincerely,

Karl A. Erb
Associate Director
for Physical Sciences and Engineering

Dr. Erich Bloch
Distinguished Fellow
Council on Competitiveness
900 17th Street, NW
Suite 1050
Washington, DC 20006

Enclosure

cc: R. White
L. Schwartz

Sent 5/26

"Document Control"

TYPE: INFORMATION
ORIGINATOR: 02
DOCUMENT NUMBER: 9201700
STATUS C
DIRECTORATE STATUS

****

FROM: WHITE, ROBERT: UNITED STATES DEPARTMENT OF COMMERCE

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 05/06/92

SUBJECT: INTERNATIONAL COMPARISON OF ACTIVI OF THE CROSS-CUT INITIATIVES.

****

DIRECTORATE ASSIGNED:

STAF ASSI

ACTION REQUIRED:

STAF ACTI(

****

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED:

ST.

DATE CO.

****

COPIES TO: INTERNATIONAL/POLICY
D. Allan Bromley
FCCSET

****

WHITE HOUSE TRACKING #:

CONTACT

PH

REMARKS:

Allan - Interesting - but - I'm a little concerned that this document, with its mixture of factual and subjective statements, might inject some artificial considerations into priority-setting within the crosscuts! If we're going to make international comparisons we'll have to find a way to validate the results with our private sector — esp. industry
Karl

Copy to Dave Glanville, please
Copy to KE Materials file 5/20
Route orig back to Dr. Bromley

Copies for AD's and Asst D's
Comments please
DAB

OSTP RECEIVED: 05/12/92
DEPT RECEIVEI
FILE: INTERNATIONAL

CENTRAL FILES: FCCSET-MATS. CROSSCUT
AMPP.

~~[illegible] interesting to get the comments of the FCCSET working groups that [illegible] crosscuts~~

KE 5/26

UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for Technology
Washington, D.C. 20230

May 6, 1992

Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
360 Old Executive Office Building
17th & Pennsylvania Avenue, N.W.
Washington, D. C. 20506

Dear Allan,

At last we have compiled the information you requested on an international comparison of activities in the areas of the Cross-Cut Initiatives.

Interestingly enough, the federal government does not maintain this sort of data. We have indicated the sources in each case. It is not as comprehensive as I would have liked. As a result, you might give consideration to the recommendation made in the Appendix.

Sincerely,

Robert M. White, Ph.D.

Enclosure

cc: Deputy Secretary Rockwell Schnabel

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Report	Comparison of R&D Activitied in the United States, Europe, and Japan for Four FCCSET Initiatives (17 pp.)	5/92	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Organization Files - FCCSET
WHORM Cat.:
File Location: Physical Science: FCCSET: AMPP [Advanced Materials and Processing Program] [1992]

Date Closed:	5/13/2010	**OA/ID Number:**	62073-006
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

"Document Control"

TYPE: INFORMATION DOCUMENT NUMBER: 9200439
ORIGINATOR: 02 STATUS C DIRECTORATE STATUS

****

FROM: HELLEM, Steven B.: USACA

TO: DR. D.A. BROMLEY

DATE OF CORRESPONDENCE: 02/04/92

SUBJECT: HE IS WRITING TO EXPRESS HIS ASSOCIATIONS SUPPORT OF THE PRESIDENT'S ADVANCED MATERIALS AND PROCESSING INITIATIVE.

****

DIRECTORATE ASSIGNED:

STAFF ASSIGNED:

ACTION REQUIRED:

STAFF ACTION:

****

SENDER'S DUE DATE:

OSTP DUE DATE:

STAFF DUE DATE

DATE COMPLETED:

DATE COMPLETED/DEPT:

****

COPIES TO: D. Allan Bromley
~~INDUSTRIAL~~

****

WHITE HOUSE TRACKING #:

CONTACT PERSON:

PHONE: EXT:

REMARKS:

OSTP RECEIVED: 02/10/92 DEPT RECEIVED:

FILE: INDUSTRIAL

CENTRAL FILES:

0438 I

UNITED STATES
ADVANCED CERAMICS ASSOCIATION
Suite 300
1440 New York Avenue, NW
Washington, DC 20005
Telephone 202 638-1200
Fax: 202 639-8685

February 4, 1992

The Honorable D. Allan Bromley
Assistant to the President for Science &
Technology
Old Executive Office Building
17th Street & Pennsylvania Avenue, N.W.
Washington, DC 20506

Dear Dr. Bromley:

On behalf of members of USACA, I want to commend you and your office for your efforts in support of the President's Advanced Materials and Processing Initiative.

It was particularly exciting to be part of the White House briefing and the Department of Commerce briefing where you highlighted the importance of advanced materials. You and your staff are to be commended for the support inside the Administration that you have given to recognizing the importance of materials to the economy and to our technology base.

As you know, in 1990 USACA launched "Bridging the Gap: An Advanced Ceramics Development and Commercialization Program," in an effort to encourage a stronger partnership between the federal government and the domestic advanced ceramics industry and the commercialization of advanced ceramics and advanced materials.

In view of the focus of our program we were very pleased to see that the Administration has recognized the importance of bridging the gap in its materials programs.

Dr. Bromley, congratulations again on the significance of the new materials initiative. We stand ready to work with you to support materials programs that emphasize the importance of cooperative programs focussed on commercializing advanced ceramic and advanced material components and parts produced by U.S. manufacturers.

Sincerely,

Steven. B Hellem
Executive Director

SBH:LS:(ACA):AC9380ACA

UNITED STATES
ADVANCED CERAMICS ASSOCIATION
Suite 300
1440 New York Avenue, NW
Washington, DC 20005
Telephone 202 638-1200
Fax: 202 639-8685

FOR IMMEDIATE RELEASE
January 31, 1992

CONTACT: CLARE SCHULZKI
202-638-1200

ADMINISTRATION ECHOES USACA'S CALL TO "BRIDGE THE GAP"

Washington, DC, January 31, 1992 -- The United States Advanced Ceramics Association (USACA) applauds the Administration's recent Presidential Initiative to "bridge the gap" between basic and applied research and development. The Initiative was unveiled as part of the FY 1993 proposed budget by Dr. D. Allan Bromley, director of the White House Office of Science and Technology Policy (OSTP).

In 1988, USACA published "Bridging the Gap: An Advanced Ceramics Development and Commercialization Program" and launched a six-point Bridging the Gap initiative with specific recommendations to advance commercialization and competitiveness of the U.S. advanced ceramics industry.

"We're looking forward to working with the Administration in bridging the gap between R&D and commercialization of advanced ceramics," said Steve Hellem, Executive Director of USACA. "Our foreign competitors have all targeted advanced ceramics and advanced materials as a key to industrial competitiveness and are aggressively developing the technology, and the Administration has recognized the need to respond to this international challenge."

The Presidential Initiative, outlined in the report "Advanced Materials and Processing: The Federal Program in Materials Science and Technology," is a coordinated interagency effort to "exploit opportunities in materials research and development to meet significant national goals and to extend U.S. leadership in this area." The program will focus attention on cooperation between universities, government laboratories and industry to bring more materials to the market.

"The federal government is uniquely positioned to search out and identify emerging technologies and prime the pump on long-term activities," said Hellem. "The new Presidential Initiative represents a commitment to work for the continued viability of our domestic advanced ceramics and advanced materials industry."

"Advanced ceramic and advanced material products and applications will revolutionize business in the world," said Hellem. Industrial applications include improved electronic components, new advanced heat engine and stationery gas turbine technologies, the national aerospace plane and other aerospace advances and environmental applications.

USACA represents more than 30 major manufacturers and users of advanced structural and electronic ceramic materials and is dedicated to the enhancement of international competitiveness and commercialization of the U.S. advanced ceramics industry.

###

(ACA):AC9377LAZ

THE WHITE HOUSE

WASHINGTON

April 28, 1992

Dear Mr. Hellem:

Thank you for your letter supporting the President's Advanced Materials and Processing Initiative for Fiscal Year 1993. USACA's "Bridging the Gap" program provides an important frame of reference for examining the issues involved in transitioning laboratory R&D to industrial application. All of us involved in the Initiative look forward to working with the industries which rely on advances in materials to implement a national R&D strategy for materials science and technology.

Sincerely yours,

D. Allan Bromley
The Assistant to the President
for
Science and Technology

Mr. Steven B. Hellem
Executive Director
United States Advanced
Ceramics Association
Suite 300
1440 New York Avenue, N.W.
Washington, D.C. 20005

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

STAFFING SHEET

SUBJECT: LTR. FROM HELLEM, USACA

ORIGINATOR: KARL ERB **PHONE:** ~~574~~ 5130

DATE ORIGINATED: 4/28 **DATE DUE:** 4/29 **CORR TRACKING NO:** 9200439

EXTERNAL COORDINATION:

	COMMENTS	DATE
DIRECTOR		
GENERAL COUNSEL		
EXEC. ASST.		

ACTION REQUESTED:

COORDINATION		COMMENTS	DATE
Henderson, D. A.	Concur: ✓ Non Concur:		
Erb, K.	Concur: Non Concur:	KE	
Ratchford, J. T.	Concur: Non Concur:		
Wong, E.	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		
	Concur: Non Concur:		