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JOHN C. HEMMINGER
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September 15, 2005

Dr. Francis DiSalvo
Director, Cornell Center for Materials Research
John A. Newman Professor of Physical Science
Department of Chemistry
Cornell University
Ithaca, NY 14853

Dear Professor DiSalvo:

The Basic Energy Sciences Advisory Committee (BESAC) has been charged by the Department of Energy Office of Science to assemble a Committee of Visitors (COV) to review the management processes for the Materials Sciences and Engineering Division of the Basic Energy Sciences (BES) program. Thank you for agreeing to chair this BESAC COV panel. Under your leadership, the panel should provide an assessment of the processes used to solicit, review, recommend, and document proposal actions and monitor active projects and programs.

The panel should assess the operations of the Division's programs during the fiscal years 2003, 2004, and 2005. The panel may examine any files from this period for both DOE laboratory projects and university projects. The components of the Division that you are being asked to review are:

(1) Structure and Compositions of Materials
(2) Mechanical and Physical Behavior of Materials
(3) Synthesis, Processing and Engineering Sciences
(4) X-ray and Neutron Scattering Science
(5) Condensed Matter Physics
(6) Materials Chemistry and Biomolecular Materials

You will be provided with background material on these program elements prior to the meeting. The COV is scheduled to take place during the first week of April 2006 at the BES/DOE Germantown location at 19901 Germantown Road, Germantown, Maryland 20874-1290. A presentation to BESAC is requested at its Summer 2006 meeting (as yet unscheduled). Following acceptance of the report by the full BESAC committee, the COV report with findings and recommendations will be presented to the Director of the Office of Science.

I would like the panel to consider and provide evaluation of the following four major elements:

1. For both the DOE laboratory projects and the university projects, assess the efficacy and quality of the processes used to:
   (a) solicit, review, recommend, and document proposal actions and
   (b) monitor active projects and programs.
2. Within the boundaries defined by DOE missions and available funding, comment on how the award process has affected:
   (a) the breadth and depth of portfolio elements, and
   (b) the national and international standing of the portfolio elements.

In addition to the above elements, the panel is asked to provide input for the Office of Management and Budget (OMB) evaluation of Basic Energy Sciences progress toward the long-term goals specified in the OMB Program Assessment Rating Tool (PART, attached). Each of the six components (or sub-components, if appropriate) of the Materials Sciences and

Engineering Division should be evaluated against each of the four PART long-term goals. If a particular long-term goal is not applicable to a specific program component, please indicate so in the evaluation. Note that the OMB guidelines specify ratings of (1) excellent, (2) good, (3) fair, (4) poor or (5) not applicable. In addition to these ratings, comments on observed strengths or deficiencies in any component or sub-component of the Division's portfolio, and suggestions for improvement, would be very valuable.

The Division of Materials Sciences and Engineering also manages the DOE Experimental Program to Stimulate Competitive Research (EPSCoR) program. The DOE/EPSCoR program supports research cluster activities in materials science, chemical science, biological and environmental science, high energy and nuclear physics, fusion energy science, advanced computer science, fossil energy science, and energy efficiency and renewable energy science at EPSCoR states, Puerto Rico, and Virgin Islands.

I would like the panel to consider and provide evaluation of the EPSCoR program based on the following four major elements:

1. For both the Implementation grants and individual investigator projects through Laboratory-Partnership grants, assess the efficacy and quality of the processes used to:
   (a) solicit, review, recommend, and document proposal actions and
   (b) monitor active project and programs.

2. Within the boundaries defined by DOE missions and available funding, comment on:
   (a) how the award process has addressed the EPSCoR program goals and
   (b) how the Laboratory-Partnership program has taken advantage of the unique DOE laboratory assets.

Since the EPSCoR program covers the broad range of the DOE research portfolio, it will not be evaluated against the BES PART long-term measures.

If you have any questions regarding BESAC or its legalities, please contact Karen Talamini, Office of Basic Energy Sciences at 301-903-4563 or by e-mail at karen.talamini@science.doe.gov. Christie Ashton, the Program Analyst for the Materials Sciences and Engineering Division, will provide logistical support for the COV meeting. She may be contacted by phone at 301-903-0511 or by e-mail at christie.ashton@science.doe.gov. For questions related to the Division of Materials Sciences and Engineering, please contact Harriet Kung, 301-903-0497, or by e-mail at harriet.kung@science.doe.gov. Also, if I can be of any help with the process, please feel free to contact me, 949-824-6020 or by email at jchemmin@uci.edu.

Sincerely,

John C. Hemminger, Chair
Basic Energy Sciences Advisory Committee

cc: P. Dehmer
H. Kung
K. Talamini
C. Ashton

Office of Management and Budget
Program Assessment Rating Tool (PART)
Long Term Measures for DOE Basic Energy Sciences

- By 2015, demonstrate progress in designing, modeling, fabricating, characterizing, analyzing, assembling, and using a variety of new materials and structures, including metals, alloys, ceramics, polymers, biomaterials and more – particularly at the nanoscale – for energy-related applications.
    - Definition of "Excellent" – BES-supported research leads to important discoveries that impact the course of others' research; new knowledge and techniques, both expected and unexpected, within and across traditional disciplinary boundaries; and high-potential links across these boundaries.
    - Definition of "Good" – BES-supported research leads to a steady stream of outputs of high quality.
    - Definition of "Fair" – BES-supported research leads to modest outputs of good quality.
    - Definition of "Poor" – BES-supported research leads to limited outputs.
    - How will progress be measured? ***– Expert Review every three years will rate progress as "Excellent", "Good", "Fair" or "Poor".***

- By 2015, demonstrate progress in understanding, modeling, and controlling chemical reactivity and energy transfer processes in the gas phase, in solutions, at interfaces, and on surfaces for energy-related applications, employing lessons from inorganic, organic, self-assembling, and biological systems.
    - Definition of "Excellent" – BES-supported research leads to important discoveries that impact the course of others' research; new knowledge and techniques, both expected and unexpected, within and across traditional disciplinary boundaries; and high-potential links across these boundaries.
    - Definition of "Good" – BES-supported research leads to a steady stream of outputs of high quality.
    - Definition of "Fair" – BES-supported research leads to modest outputs of good quality.
    - Definition of "Poor" – BES-supported research leads to limited outputs.
    - How will progress be measured? ***– Expert Review every three years will rate progress as "Excellent", "Good", "Fair" or "Poor".***

- By 2015, develop new concepts and improve existing methods for major energy research needs identified in the 2003 Basic Energy Sciences Advisory Committee workshop report, Basic Research Needs to Assure a Secure Energy Future.
    - Definition of "Excellent" - BES-supported research leads to important discoveries that are rapidly and readily available and feed, as appropriate, into use or projected use by the Department's technology offices, by other federal agencies, and/or by the private sector. There is evidence of substantive interactions with the Department's technology offices in most BES program areas.
    - Definition of "Good" - BES-supported research leads to a steady stream of outputs of high quality that show the potential to impact energy research.

  - Definition of "Fair" – BES-supported research leads to modest outputs of good quality that show the potential to impact energy research.
  - Definition of "Poor" – BES-supported research leads to limited outputs that show the potential to impact energy research.
  - How will progress be measured? – ***Expert Review every three years will rate progress as "Excellent", "Good", "Fair" or "Poor".***

- By 2015, demonstrate progress in conceiving, designing, fabricating, and using new instruments to characterize and ultimately control materials.
  - Definition of "Excellent" - BES-supported research leads to new concepts and designs for next-generation instruments and detectors for x-ray, neutron, and electron-beam scattering.
  - Definition of "Good" - BES-supported research leads to new instruments that are world class.
  - Definition of "Fair" – BES-supported research leads to modest outputs of good quality that show the potential to impact the concepts and designs for next generation instrumentations.
  - Definition of "Poor" – BES-supported research leads to limited outputs that show the potential to impact the concepts and designs for next generation instrumentations.
  - How will progress be measured? – ***Expert Review every three years will rate progress as "Excellent", "Good", "Fair" or "Poor".***