

October 22, 1998

Professor Geraldine L. Richmond  
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Eugene, OR 97403-1253

Dear Dr. Richmond:

During the past two years, the Basic Energy Sciences Advisory Committee (BESAC) has provided invaluable help to me by assessing the scientific impact of and the Nation's need for the four BES synchrotron radiation light sources and, more recently, the High-Flux Isotope Reactor at Oak Ridge National Laboratory. I now ask you to review in a similar fashion the electron beam microcharacterization centers operated by the Basic Energy Sciences program.

The four centers to be considered in this review are the Electron Microscopy Center for Materials Research at Argonne National Laboratory; the National Center for Electron Microscopy at Lawrence Berkeley National Laboratory; the Center for Microanalysis of Materials at the University of Illinois Frederick Seitz Materials Research Laboratory; and the Shared Research Equipment Program at Oak Ridge National Laboratory. These four centers differ from our major user facilities in that they are collections of instruments (primarily electron microscopes) that are supported as part of the Materials Sciences Division research budget, i.e., these centers do not have "operating budgets" as do the synchrotron radiation light sources or the neutron facilities. These centers do, however, have a very large user base, because the suites of instruments in combination with the talents of the scientific staff at the host institutions make the centers very important for the study of the structure and the behavior of materials. The improved resolution of the new generation of electron microscopes -- now approaching 1 Angstrom -- makes these tools increasingly valuable to a variety of scientific disciplines.

I would like BESAC to empanel a group to address the following issues. What has been the scientific and technological impact of the microcharacterization centers during the past decade, and what is it expected to be during the coming decade? What is the user demand, and how is it expected to change? What special needs do each of the centers serve, and how do the centers complement one another? What is the vision of each center, are the visions appropriate, and how do the visions complement one another? What are the opportunities for improving the techniques?

I would suggest that the BESAC subpanel hold a single meeting at a site not associated with any of the facilities to hear presentations by each of the facilities. Because there is a concern that assessments based on "reverse site visits" such as the one suggested here will not provide an in-depth understanding of the user communities, I would also recommend that, as part of the review, the subpanel endeavor to talk with users from each

of the facilities. It is important that your subpanel assess the degree to which the user community at each center is being served.

To be most effective, your subpanel should provide its report to BESAC at its summer meeting in 1999. Thank you very much for your continued efforts on the part of the Basic Energy Sciences program.

Sincerely,

Martha A. Krebs  
Director  
Office of Energy Research