

The University Materials Council

President Barack Obama
The White House

July 27th, 2011

Dear President Obama:

We are writing as the Executive Committee of the University Materials Council (UMC) to express our enthusiasm and unqualified support for the Materials Genome Initiative that you announced on June 24th, 2011. The UMC is composed of the Department Heads, Chairpersons, and Directors of academic programs in Materials Science and Engineering in the United States and Canada. More than 100 university departments and programs are represented by the UMC and, together, we are responsible for all materials science and engineering education in the United States at the Bachelors, Masters, and Doctoral levels.

The UMC recently discussed the Materials Genome Initiative at its spring meeting. We view your initiative as a generational opportunity to renew the contract between the materials science and engineering community and industry for the purpose of maintaining global pre-eminence in manufacturing through new approaches to the rapid discovery, development and deployment of advanced materials and to positively accelerate the recruitment and training of an inspired and enabled engineering work force. The materials used to construct components and devices are the keys to the development of new and improved products; the Materials Genome Initiative's goal of compressing the time between materials discovery and incorporation into manufactured devices accurately addresses one of the most significant barriers to innovation. For several years we have been engaged in educational reforms associated with Integrated Computational Materials Engineering (ICME). The much broader vision articulated by the Materials Genome Initiative can grow from the foundation of ICME.

We recognize at least three exciting challenges associated with the Materials Genome Initiative. First, it will be necessary to update the way that engineers are educated. Materials engineers must be educated to consider the components in which materials are used, and the manner in which they are manufactured. At the same time, the engineers who design and manufacture devices must increasingly be educated to understand that the properties of the materials used to construct those devices can be varied and optimized by manipulating the structure of the material. Second, it will be necessary to closely integrate modeling and simulation with experimental studies throughout all phases of the initiative. Finally, the experimental and computational tools necessary to realize the visionary goals of the Materials Genome Initiative must have broad accessibility for the initiative to be successful. Through our work as educators and researchers, we believe that the UMC is ideally positioned to help meet these challenges and support the initiative.

The UMC has resolved to harness its influence in engineering education to support the goals of the Materials Genome Initiative. We intend to focus our efforts over the next several years toward supporting the initiative. For example, educational reforms will be necessary to create a generational shift toward a new, more integrated approach to materials development. We have already begun the process of reforming education within materials departments to include modeling and simulation in materials design. However,

reform will have to be more sweeping, involving all of the engineering disciplines, and we are committed to engaging the administrations of our engineering colleges to coordinate the necessary curricular changes.

The UMC is planning a focused workshop in the spring of 2012 on educational needs for supporting the Materials Genome Initiative. This workshop follows our successful 2010 workshop examining needs for ICME. The workshop will involve an overview of the Initiative, an overview of resources that are already available to support the initiative, a review of best practices for materials science and engineering education, and break-out sessions to identify the components we will need to develop to support the initiative. Because engineering faculty members must be educated in these new principles, we will also support a summer workshop aimed at training engineering faculty members in this new paradigm for materials discovery and development.

The UMC will also coordinate with materials professional societies, including the Minerals, Metals, and Materials Society (TMS) and the Materials Research Society (MRS), to bridge education with industry. Furthermore, many in the UMC have experience working in industry and most materials departments have industrial advisory boards. These links will allow us to develop our educational programs in ways that are consistent with industrial needs. We will also work with TMS to populate a web-based archive for software tools, data, and educational resources to support the Materials Genome Initiative.

Finally, the UMC believes this initiative is timely because advancements in materials synthesis, characterization, and modeling have brought us to the point where it is feasible to accelerate the discovery, development, manufacture, and deployment of new materials, with substantial benefits to the United States. As a result, the UMC has resolved to advocate for support of the Materials Genome Initiative both within our universities and with our elected officials.

Sincerely,



Helen M. Chan, Chair
Lehigh University,



Rudolph G. Buchheit, First Vice-Chair
The Ohio State University



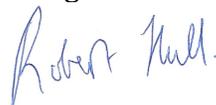
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