Minutes of the UMC Meeting
May 1 & 2, 2006
The City Club at Franklin Square
Washington DC

The meeting was called to order by Chair Gary Messing (Penn. State).

Following a round of self-introductions, the membership roster was passed around for corrections, and confirmation of attendance. The attendee list is appended.

Minutes of the Fall 2005 meeting
The minutes were approved by acclaim.

Treasurer's Report
Greg Rohrer (Carnegie-Mellon) reported that the UMC has a balance a little over $10,000. The cost of the present meeting will be between $4,500 and $5,000.

UMC Web Site
Gary Messing reported that TMS has submitted a bill of $1140 for maintenance of the UMC web site at its present location (http://www.tms.org:100/home.html). The Executive Committee will consider taking the site out of the TMS domain and manage it ourselves, with hosting services provided through Carnegie-Mellon University. The move will depend on the outcome of negotiations to reduce the annual costs with TMS. The site will be expanded to include an archive of faculty position announcements, links to member-department web-sites, and REU announcements.

ABET
Slade Cargill (Lehigh) reported that TMS and NICE have endorsed the Design White Paper prepared by himself and Ian Robertson (UIUC), addressing the content of the capstone design course. In Materials Science & Engineering, these courses are interpreted by some reviewers as being more *research* than *design*. The white paper addresses the question of what design means in the context of Materials Science & Engineering, and does not seek to change the ABET criteria. Capstone experiences related to research projects can qualify, according to the white paper, if they have a design component, including a consideration of constraints.

A question was raised concerning the definition of an "interdisciplinary team" for design purposes. Can this be met by involving metallurgists, ceramists and polymer scientists, or is it required to include members from outside of MS&E?

Peter Greene (Michigan) commented on the selection of appropriate reviewers who will properly understand the design experience in MS&E. The TMS/NICE committee is responsible for the reviewer selection for each evaluation, but there continues to be a shortage of qualified MS&E or Ceramics evaluators.

Kathleen Richardson (Clemson) reported that the NICE accreditation committee seeks feedback from UMC on several related questions:

Dual-level accreditation

ABET does not allow accreditation of degrees with the same title at different levels (*i.e.* BS and MS) and this is perceived as a barrier to moving accreditation to the MS level, as recommended in the NAE report *Educating the Engineering of 2020*. An alternative to ABET might be to accredit through the Applied Science Accreditation Consortium (ASAC), which does allow dual-level accreditation. Slade Cargill (Lehigh) pointed out that this would become a requirement, not an option, for schools in states where it is required that all programs that may be accredited, must be. The additional burden would be a problem.

Motion:

> The UMC strongly opposes accreditation at the masters degree level for Materials Science & Engineering programs.
> Proposed: Greg Rohrer (Carnegie-Mellon); Seconded: Ian Robertson (UIUC).
> Approved. 24 in favor, 1 opposed, 1 abstention.

A discussion ensued on the subject of accreditation of the subject as an applied science rather than an engineering discipline. This was not met with great enthusiasm. It was felt that the potential for physics and chemistry programs to be accredited for materials science is a matter over which we would have little control.

Annual Survey

Bob Snyder (GaTech) summarized the results of the annual survey of Materials programs. The complete data set will be provided to those schools that completed and returned the survey.

A number of cautions were presented regarding the data:

- Combined departments such as Chemical and Materials Engineering frequently report information from the entire department rather than just the materials component.
- Research expenditure reports are sometimes inconsistent with the ASEE data, which enforces more rigorous standards, for example in the accounting of grants with multiple investigators. ASEE numbers tend to be lower than those in the UMC survey.

Several requests were made concerning the presentation and/or collection of data:

- Present female, minority and foreign enrollments as percentages of the total, rather than raw numbers. Presentation of the trends in these numbers over several years would also be useful.
- SAT scores need to be reported in the new system (base 2100) in future years. The current base is 1600.
- Endowment information was requested
- Numbers of chaired professorships were requested
- Numbers (& percentages) of minority PhD's awarded were of interest.
- Information on placement of graduates was requested, including numbers and percentages going into various industry sectors, government and graduate school.
- Information on starting salaries (sometimes hard to get) and salary progression (even harder) for our alumni.

It was commented that MS&E programs have traditionally led all other engineering disciplines in research expenditures, but have been outstripped by Biomedical Engineering as that field has emerged. It was also remarked that there have always been sufficient jobs for MS&E grads, but companies are growing less likely to recruit them, often resorting to re-training engineers from other disciplines to meet their needs for materials expertise.

Globalization of Materials

Alex King (Purdue) led a discussion of the impact of globalization on jobs for materials engineering. He stressed the point of view that the growth of technology-based economies in China and India creates new demand for engineers in general, and materials professionals in particular. The efforts of these countries to educate and retain more of their own talent is not likely to meet their needs, so there are new opportunities for those who are well-trained to meet them. This calls for revisions to the materials curriculum, and there is an opportunity for MS&E to lead the engineering profession in this area.

President Bush has called for a new generation of graduates who have training in "strategic languages" and other aspects of global awareness, and it is anticipated that funding will follow in areas that support this initiative, in coming years.

Alex presented series of questions related to globalization and internationalization, for use in the annual survey. These were discussed by the Council and several suggestions were taken from the floor. The questions will be added to the survey for next year.

Merging of the Materials Discipline

Subhash Mahajan described the process of consolidation of materials programs across the colleges of engineering and science at Arizona State. (Presentation available on the UMC web-site).

Carlo Pantano described the development of the Materials Research Institute, and its operation at Penn State. (Presentation available on the UMC web-site).

Kathleen Richardson described the creation of a Materials Science & Engineering department at Clemson University. This department emerges from historic strengths in textiles and ceramics, rather than the more common emergence from a metallurgy department. (Presentation available on the UMC web-site). Some interesting lessons about the impact of the business and political environment of the state were laid out for the Council.

Undergraduate Enrollments

Peter Davies described the impact of a distinct refocusing of the undergraduate curriculum onto nanotechnology at the University of Pennsylvania. Strong improvements in undergraduate enrollment were the primary measurable result, but other effects such as an increased need for teaching assistantships have also occurred. (Presentation available on the UMC web-site).

Kevin Jones presented data on the effect of recruitment activities on undergraduate enrollment at the University of Florida. (Presentation available on the UMC web-site).

A discussion of the impact of increasing enrollments on the placement of graduates followed. There was a sense that there is still significant demand for MS&E graduates, and there is little fear of saturating the market. Companies do need to be educated continually, however, on the need to hire MS&E grads to do materials work.

Executive Committee Nominations

Alex King (Purdue) presented a slate of nominees on behalf of the Nominating Committee (King, Robertson, Jones). Further nominations were solicited from the floor, and none were made.

Motion:

The University Materials Council elects the following as the officers of the Council (or ratifies their succession, as called for in the Charter):

Past Chair:	Gary Messing (Penn State)
Chair:	Alex King (Purdue)
1st Vice Chair:	Ian Robertson (UIUC)
2nd Vice Chair:	David Clark (Virginia Tech)
At Large (exp. 2007)	Ned Thomas (MIT)
At Large (exp. 2008)	Amy Moll (Boise State)
Treasurer	Greg Rohrer (Carnegie-Mellon)

Proposed: Alex King (Purdue); Seconded: Subhash Mahajan (ASU)
Approved unanimously.

Amendments to UMC Charter

Gary Messing (Penn State) led a discussion of desired changes to the Charter.

Motion:

Policy on the use of UMC members' email and mailing addresses proposal (Gary Messing)
Motioned: Gary Messing (Penn State); Seconded: Bob Snyder (GaTech)
Approved unanimously. (Policy available on the UMC web-site)

Motion:

Amendments to update the UMC Charter proposed (Gary Messing).
Motioned: Bob Snyder (GATech); Seconded: Ian Robertson (UIUC)
Approved unanimously. (Amended Charter on the UMC web-site)

Peter Greene (Michigan) asked for permission to use the mailing list as a means of collecting data for the CSSS Decadal Study of Solid State Physics. Approved by acclamation.

Location of Fall Meeting

Alex King asked for a sense of the Council on its preferred location for the Fall meeting, giving the options of the MRS Meeting in Boston and the MS&T Meeting in Cincinnati. A show of hands gave 7 votes to Boston, and 10 to Cincinnati.

(Adjourned for Dinner at Red Sage restaurant.)

Tuesday May 2, 2006

Materials Representation in Washington: Lyle Schwartz, NMAB
(Presentation available on the UMC web-site)
Lyle informed us that it was unclear that there is sufficient support for NMAB to perform a decadal study of MS&E. He presented an argument in favor of accreditation at the MS level. He described the successful ASM Materials Camp program, and solicited increased participation in the program, suggesting that UMC members can contact him at lyle.schwartz@verizon.net.

Materials Research Support at DOE: Tim Fitzsimmons, DOE
(Presentation available on the UMC web-site)
Tim discussed the president's proposal to double research funding in the physical sciences over ten years, particularly noting how "earmarked" funds would negatively affect the growth of overall funding. He noted that about half of the DOE increase will go to universities, and half to the national laboratories. This compares with the traditional funding mix of 75% to the labs and 25% to universities. In response to questions, he discussed the possible impacts of creating ARPA-E, as suggested by the NAS report *Rising Above the Gathering Storm*. He also pointed out that education or "broader impact" components are not a significant factor in funding decisions at DOE.

Helping Your Faculty to be Successful at NSF: Lynnette Madsen, NSF.
Lynnette presented several strategies that can be used by faculty, especially beginning faculty, for gaining funding from NSF. There was some discussion of the "novelty" and "broader impact" aspects of proposals and funding decisions, and also the recent adoption of and effective deadline for receipt of proposals in DMR. In response to questions from the floor, Lynnette indicated that approximately 175 proposals have been received this year, in the ceramics program, 42 of which are for Materials World Network projects. 29 or 30 proposals will be funded. Approximately 10% of currently funded projects are FRGs.

In floor discussion, Tim Fitzsimmons drew attention to a difference between DOE and NSF, with respect to the acknowledgment of support in papers. DOE requires a clear delineation of the research that they have supported, and prefers that DOE-supported work should be published as stand-alone papers wherever possible. Lynnette Madsen indicated that NSF is rather less concerned with separating out the parts of the work done using NSF support, suggesting that a rather generic statement of joint support was a sufficient acknowledgment for work partly supported by the Foundation.

Opportunities in Materials Research and Education - An NSF Perspective, Lance Haworth, NSF

Due to a scheduling problem Lance Haworth was unable to attend to give his presentation. However, his presentation is available on the UMC web-site

The meeting adjourned at 11:00am.