

# **Department of Materials Science and Engineering Ten-Year Review**

## **Department Response to the Report**

Submitted by

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### **Introduction**

The Department thanks the members of the review committee for their time, thoughtful discussions and critical evaluation of our Department's strengths and shortcomings. We very much appreciate the insightful comments regarding ways to further improve the Department.

### **Response to the Executive Summary**

The Department is very happy to note that the review committee has noted the significant improvement since the last review and commented on the positive, optimistic and collaborative climate in the Department. The committee's highly positive comments regarding teaching excellence and quality and quantity of the Department's productivity are a resounding positive endorsement of the path that the Department has taken. We completely agree with the observation that with appropriate additional resources (2-3 new faculty positions and associated resources), the Department is poised to significantly enhance its national standing.

### **Undergraduate Program**

We agree with the observations that the committee has made regarding the strengths of the program. These include large size, high quality and the demand of our graduates in industry, government and graduate programs. The committee has commented on the high quality of the students in the Department and their positive experience in the Department, the successful integration of the Metallurgy and Ceramic Engineering degrees, the excellent job that the Department is doing in teaching its service course (MSE 170), the high level of experiential learning experience that the students get and the value that they put on this and finally, the involvement of all UG students in research. An additional strength we would like to highlight is that the Department has a very diverse UG student population with a significant number of underrepresented minority students.

In terms of recommendation, we will work on improving the lab equipment. The committee has commented on the bimodal nature of our UG student quality and has suggested that raising the standard of admission may deprive the lower-GPA students an opportunity. The Department is debating this issue and no firm decision has yet been made.

#### *Response to Principal Recommendation to the Department*

The department will maintain its current level of UG students (approximately 35-40 BS degrees every year), and continue to focus on recruiting outstanding students including those from community colleges. As recommended, the improvement of the UG teaching lab equipment will be a major priority of the Department.

### **Graduate Program**

The committee noted the high morale of the graduate students, their confidence in the faculty and Chair, their involvement in enhancing the department, high quality of teaching and the positive trends in the Department with respect to research and education. We would also like to highlight the competitiveness of our graduate students in College, University and national fellowships (almost 20 % of our graduate students have competitive fellowships), support for all full time students and the increasing number of PhDs from the Department.

We believe that the quality of the students has improved. However, this improvement is very recent and not reflected in the data provided to the committee. We will continue to monitor this trend. We have begun the review of pathways to Ph.D. and graduate curriculum. Both of these should lead to reduced graduation time. Effective recruitment strategies are being developed to enhance the diversity of our graduate students. Finally, we are focused on better integrating research associates into the Department.

#### *Response to Principal Recommendation to the Department*

We agree with the recommendations of the committee. The Graduate Program Committee has already started looking into further clarifying the guidelines for Ph.D. and into identifying direct pathways for Ph.D. (without MS). In addition, later this year, we will begin a comprehensive review of the graduate curriculum.

With respect to the last recommendation, regarding new faculty to teach courses in their area of research specialty, the Department's review of the graduate curriculum is targeted at making the curriculum more flexible and thereby assist faculty in developing courses in areas of their research specialty.

### **Research External Research Collaborations**

The Department is very proud of the significant increase in the quality and quantity of its research productivity and its external research collaborations. Almost all the faculty members have collaborations with faculty from other departments, other institutions, national labs and international colleagues. We are very happy to learn that our collaborators see us as valued members of these teams and the committee has concluded that our envisioned goal of the

Department acting as a catalyzing nucleus and resource for collaborations on campus and beyond has been well met. We believe that this is one of the unique strengths of the field and collaborations provide excellent opportunities for our students. We will continue to actively participate in and lead collaborative research programs.

#### *Response to Principal Recommendation to the Department*

We have started discussions within the Department to develop a strategic vision for future faculty recruitment. In parallel, we have initiated discussions with the Dean to seek additional faculty positions, space and staff positions. This is the most important recommendation for significant enhancement of the Department.

We are committed to running a multi-user state-of-the-art Electron Microscopy facility. We have recently acquired two new instruments which will be the centerpiece of this facility. In addition, we have significantly increased the non-machine shop responsibilities of one of our technical staff members. This is following the committee's recommendation regarding the machine shop.

#### **Culture/Diversity/Climate**

The committee has noted that the Department has a diverse faculty. They also note that the diversity of our student body is in line with national statistics. We would like to highlight that compared to other engineering departments at the University of Washington, we have a very large proportion of underrepresented undergraduate minority students. For example in Autumn 2003, 17% of undergraduate students were underrepresented minority students (compared to about 5 % for the College of Engineering). We have teamed up with the Graduate School and the Associate Dean of Engineering to recruit outstanding underrepresented minority graduate students.

#### *Response to Principal Recommendation to the Department*

The Department has already started working on improving the integration of research associate in the activities of the Department. In particular we are working with the Cross-Departmental Transformation program of ADVANCE to focus our attention on this issue.

Finally, our graduate students have been very competitive for College and University level fellowships and now we are increasing our focus on nominating and supporting them for national fellowships. One result of this is that in both 2003 and 2004, one graduate student each year has won the National Science Graduate Research Fellowship. This year, one student has also won the National Defense Graduate Fellowship. Finally, we are working closely with the Graduate School and the Associate Dean for Engineering to recruit underrepresented minority students.

#### **Departmental Resources**

We completely agree with the summary observation of the committee. Additional resources (faculty positions, staff and space) will be needed to bring the Department to the next level of

excellence (among the top 20 nationally). A minimum of 15 faculty positions are needed to achieve this goal. The faculty hires should be strategic and capitalize on the unique strengths and opportunities at the University of Washington. We believe that we did this very well in our last set of hires (three since 1999). We have started developing a strategic plan within the Department and also started talking to the Dean regarding the additional resources.

The Department will undertake a restructuring of its administrative staff, and a careful assessment of its space utilization. The review committee has recommended both of these. In addition, we have begun the process of establishing a multi-user cost-recovery Electron Microscopy Center. As recommended by the committee, we will carefully monitor and evaluate the performance of this Center to ensure that it is viable and successful campus wide resource.

### **Acknowledgement**

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