

Department of Chemistry

December 6, 2005

MEMO TO: Evaluators

FROM: A.L. Baumstark

RE: Chair's Overview of Department of Chemistry's Self-Study Report

The departmental Self-Study Committee, chaired by Regents Professor Dave Wilson, did an outstanding job of presenting and analyzing the state of the department and the extensive changes that have occurred over the last five years. The Chair commends the committee for the concise, well-written document. The report was unanimously approved by the departmental faculty. The unified shared vision of the faculty has allowed for efficient functioning of the department despite the limited resources. Despite apparent differences, we all work for the overall improvement of the department by all rowing in the same direction.

This overview will provide some additional perspectives on the events and status described in the self-study report. For example, while the table (A-1) in the self-study report indicates little growth in the tenure-track faculty of the department over the last five years, growth in faculty quality was substantial. Hidden in the data is the steady replacement of retiring faculty with new tenure-track faculty. Thus, faculty members who were hired when the department was an M.S.-granting department were replaced with faculty who were interested in a Ph.D.-granting, research-oriented department. As these new faculty achieved funding of their proposals, the departmental research effort began to grow rapidly.

The departmental interactions have always had an interdisciplinary element, primarily with Biology. Over the years the Chemistry-Biology connection has increased and strengthened. In particular, the Biochemistry section of the department has grown from one to five tenure-track faculty members with research foci on nucleic acids and peptides, complementary to the Molecular Biology group in Biology. Graduate students, core facilities, etc. are shared between Biology and Chemistry with much of the emphasis in Biochemistry and Biophysical Chemistry. In addition, there have been joint interdisciplinary efforts (Bioinformatics Options in M.S. and Ph.D. programs) with Computer Science that have led to new funding opportunities. There also are positive interactions with Geology via the Geochemistry Ph.D. option.

The department has always fit well with the major University strategic plan because of its focus on biotechnology and drug discovery. Together with Biology, Chemistry is at the heart of the highly productive Center for Biotechnology and Drug Design. With the increased interdisciplinary efforts of the department, Chemistry is one of the lead departments in the highly rated University area of focus initiative the Molecular Basis of Disease (MBD). Chemistry is also actively involved in a second highly rated University Strategic Initiative Brains and Behavior (BB). Thus, the centrality of the Chemistry Department programs and efforts in regard to the University's and the College's strategic plans has dramatically increased and is in line with the highest priorities.

The viability of the department's programs was solid during the previous assessment and has increased dramatically over the last three years. Over the next several years the number of B.S. degrees produced will increase substantially from ~20/year to 35-40/year. The quality of the undergraduate majors is improving as shown by data in the self-study Appendix and the diversity is high and constant. This increase will put pressure on the infrastructure of the upper level program, which is already beginning to be felt. Since each B.S. graduate is required to carry out an undergraduate research project, finding lab space and funds to support this capstone effort will become a major problem. The department's M.S. degree production will continue to run roughly 12-15 students/year. We have been ranked as high as 12th nationally in M.S. production and can expect to continue to produce in the top 20 national ranking range. The department normally finds the demand for M.S.'s in the metro region to be roughly 50/year with the entire state only producing 45/year. Georgia Tech and GSU together annually produce ~80% of the M.S. Chemistry degrees in Georgia and fluctuate in the number one position. The Ph.D. program's viability will increase to roughly 10 students/year over the next several years. Currently the department has a reasonable 6-7 students/year average but sees a cyclic fluctuation of a large Ph.D. year followed by several lean years. As the Ph.D. graduate student numbers increase, this is expected to stabilize at the higher numbers. The quality of the graduate students is steadily improving. Now that we are able to offer competitive stipends (beginning in '04) and have increased our recruiting efforts, we expect substantial improvement over the next several years. Recruitment of high quality Ph.D. students is and will remain a high priority of the department as will graduate student funding (stipend) levels.

As the self-study report indicates, Chemistry enrollments have increased dramatically to the point that capacity of the facilities has been reached for many classes. In fact, Chemistry has set a new record enrollment for every semester since the 1996 Olympics! The University often gauges enrollment by those registered in the Fall term, but Chemistry's largest term is actually Spring! Summer enrollments continue to climb due to the limited capacity for certain courses during the academic year. This substantial increase has not been matched by budget increases. The department has received some funds to partially support increased capacity (build student desks to allow more sections to be taught) and hire a visiting lecturer, etc. Surprisingly, as a laboratory-oriented science, Chemistry is actually generating roughly \$1.5M more than predicted based on expenses. Thus, this puts a major research grant-producing department in the position of subsidizing the overall University budget. As the self-study report notes, in the last several years the department has received a substantial

increase in Ph.D. graduate student research support. There has not been a consistent increase in graduate teaching assistantships to mirror the enrollment increase. This issue will need to be addressed if the department is to continue to maintain the quality of the instructional program.

In regard to new tenure-track faculty hires, the self-study report correctly points out the problems of starting salaries, space and start-up costs. Faculty whom we now wish to hire generally have offers from several competitive universities nationally. To continue to enhance the quality of the new faculty, competitive start-up packages will have to be offered. The salary issue is well presented and needs no additional comment. The space issues must be addressed in the planning of the new University Research Park, which will need to be re-evaluated to allow for expansion of the strong research base of the department. Start-up costs may be a more important issue than previously expected since the Georgia Research Alliance has just cut the funding for equipment that is available for that use.

In addition to research space shortages, the department is facing a shortage of teaching space in the New Science Teaching Facility. During the initial planning phase several years ago, 25,000 sq. ft. of Chemistry space in Kell Hall was converted into 20,000 sq. ft. of space in the new facility. This was before the tremendous growth seen recently in instructional demand. The instructional space allotted to Chemistry in the New Science Teaching Facility needs to be carefully re-evaluated so as not to impact other departments' programs (and future plans of the students, especially those going on to medical, dental, pharmacy and veterinary schools) and allow the department to continue to develop.

With the federal research budget restrictions, faculty members who are competitive for support from NIH, NSF, and other federal funding agencies are likely to face several years of tight, almost impossible funding odds. Thus, an increase in proposal submissions is going to be required to maintain and hopefully to expand the research base. The department has a solid record of proposal funding vs. proposals submitted, but even now more proposals should be submitted. This is not happening because the faculty is severely overworked. A substantial improvement in infrastructure is needed to free faculty time to increase the number of proposals submitted to (a) minimize the federal grant budget cutbacks and (b) hopefully to increase the research funding and status of the department and the University.