

An Open Letter to ...

SENIORS IN CHEMICAL ENGINEERING

*As a senior, you probably have some questions
about graduate school.*

*The following paragraphs may assist you
in finding some of the answers.*

Should you go to graduate school?

We invite you to consider graduate school as an opportunity to further your professional development. Graduate work can be exciting and intellectually satisfying, and at the same time can provide you with insurance against the ever-increasing danger of technical obsolescence in our fast-paced society. An advanced degree is certainly helpful if you want to include a research component in your career and a Ph.D. is normally a prerequisite for an academic position. Although graduate school includes an in-depth research experience, it is also an integrative period. Graduate research work under the guidance of a knowledgeable faculty member can be an important factor in your growth toward confidence, independence, and maturity.

What is taught in graduate school?

A graduate education generally includes a coursework component and a research experience. The first term of graduate school will often focus on the study of advanced-core chemical engineering science subjects (*e.g.*, transport phenomena, phase equilibria, reaction engineering). These courses build on the material learned as an undergraduate, using more sophisticated mathematics and often including a molecular perspective. Early in the graduate program, you will select a research topic and a research adviser and begin to establish a knowledge base in the research subject through both coursework and independent study. Graduate education thus begins with an emphasis on structured learning in courses and moves on to the creative, exciting, and open-ended process of research. In addition, graduate school is a time to expand your intellectual and social horizons through participation in the activities provided by the campus community.

We suggest that you pick up one of the fall issues of *Chemical Engineering Education (CEE)*, whether it be the current issue or one of our prior fall issues, and read some of the articles written by scholars at various universities on a wide variety of subjects pertinent to graduate education. The chemical engineering professors or the library at your university are both good sources for borrowing current and back issues of *CEE*.

Perusing the graduate-school advertisements in this special compilation can also be a valuable resource, not only for determining what is taught in graduate school, but also where it is taught and by whom it is taught. We encourage you to carefully read the information in the ads and to contact any of the departments that interest you.

What is the nature of graduate research?

Graduate research can open the door to a lifelong inquiry that may well lead you in a number of directions during your professional life, whether you pursue it within the confines of an industrial setting or in the laboratories of a university. Learning *how* to do research is of primary importance, and the training you receive as a graduate

student will give you the discipline, the independence, and (hopefully) the intellectual curiosity that will stand you in good stead throughout your career. The increasingly competitive arena of high technology and society's ever-expanding fields of inquiry demand, more than ever, trained and capable researchers to fuel the engines of discovery.

Where should you go to graduate school?

There are many fine chemical engineering departments, each with its own "personality" and special strengths. Choosing the one that is "right" for you is a highly personal decision and one that only you can make. Note, however, that there are schools that specialize in preparing students for academic careers just as there are those that prepare students for specific industries. Or, perhaps there is a specific area of research you are interested in, and finding a school or a certain professor with great strength or reputation in that particular area would be desirable. If you are uncertain as to your eventual field of research, perhaps you should consider one of the larger departments that has diversified research activity, giving you the exposure and experience to make a wise career choice later in your education. On the other hand, choosing a graduate school could be as simple as choosing some area of the country that is near family members or friends; or you may view the benefits of a smaller, more personal, department as more to your liking; or you might choose a school with a climate conducive to sports or leisure activities in which you are interested.

Many factors may eventually feed into your decision of where to go to graduate school. Study the ads in this special printing and write to or view the Web pages of departments that interest you; ask for pertinent information not only about areas of study but also about fellowships that may be available, about the number of students in graduate school, about any special programs. Ask your undergraduate professors about their experiences in graduate school, and don't be shy about asking them to recommend schools to you. They should know your strengths and weaknesses by this stage in your collegiate career, and through using that knowledge they should be a valuable source of information and encouragement for you.

Financial Aid

Don't overlook the fact that most graduate students receive financial support at a level sufficient to meet normal living needs. This support is provided through research assistantships, teaching assistantships, or fellowships. If you are interested in graduate school next fall, you should begin the application process early this fall since admission decisions are often made at the beginning of the new calendar year. This process includes requesting application materials, seeking sources of fellowships, taking national entrance exams (*i.e.*, the Graduate Record Exam, GRE, is required by many institutions), and visiting the school.

A resolution by the Council of Graduate Schools—in which most schools are members—outlines accepted practices for accepting financial support (such as graduate scholarships, assistantships, or fellowships). You should be aware that the agreed upon deadline for accepting offers of financial support for a fall-term start is April 15. The resolution states that you are under no obligation to respond to offers of financial support prior to April 15 (earlier deadlines for acceptance violate the intent of the resolution). Furthermore, an acceptance given or left in force after April 15 commits you to reject any other offer without first obtaining a written release from the institution to which the commitment has been made.

Historically, most students have entered graduate school in the fall term, but many schools do admit students for other starting dates. □

We hope that this special collection of chemical engineering graduate-school information proves to be helpful to you in making your decision about the merits of attending graduate school and assists you in selecting an institution that meets your needs.