Successful Transitions from Graduate School to the Marketplace

Distinguished Faculty, Scientists, Alumni, Students and Guests,

It is my great pleasure to welcome you to the Second Annual Dow Chemical Graduate Research Symposium hosted by the William G. Lowrie Department of Chemical and Biomolecular Engineering at The Ohio State University.

This symposium is a platform for the graduate students to present their research and solicit feedback from industrial professionals. The primary professional interactions for most graduate students occur in an academic setting with university colleagues, research collaborators, or academic conferences. Today's event will provide an excellent opportunity for research professionals and graduate students to learn, share ideas, and network with each other. The engagement of our guests is vitally important since you can provide new insights into their research from a completely different perspective. Today would not be possible without the participants from industry, so I thank you in advance for the impact you will have throughout the day.

Before we immerse ourselves in the excellent presentations, posters and technical details, I want to briefly address the graduate students and encourage them to look ahead to life after graduate school and envision the beginning of their professional careers. Time has a habit of passing by very quickly, especially when we are busy and deeply engrossed in our research. Before you know it, you will pass the oral exams and receive your diploma. Many of you will decide to work in industry, and those who pursue a career in academia will certainly interact and collaborate with businesses.

The marketplace and industrial research environment will be very different from your university experience. In the spirit of looking forward, I want to share some personal insights and pragmatic advice to help you make a successful transition to your career after graduate school.

1 - Discover the Art of Collaboration

Engineers are trained to be excellent problem solvers. As Ohio State graduate students, you should be among the best. Universities offer many degree programs and challenge their students to master a discipline like Chemical Engineering to prepare for a career in a field such as research. Research challenges are commonly approached from a single disciplinary perspective. The marketplace operates very differently by applying multi-disciplinary approaches; Industrial companies recognize that a team comprised of diverse backgrounds and skills can foster new ideas beyond a single discipline approach. Project teams are assembled to develop products and technologies with professionals from various engineering disciplines, material science, chemistry, biology, and statistics. Teams reach beyond R&D and include manufacturing, application specialists, finance, marketing, and business professionals.
Successful Transitions from Graduate School to the Marketplace

Complex problems require diverse and talented teams to explore and discover unique solutions. Industrial companies have discovered the power of a multi-disciplinary and multi-functional methodology. Successful researchers must learn to collaborate across functions and disciplines in a team environment. The qualitative skills to collaborate and work in diverse teams are essential.

- Evaluate your team skills. Are you a good team member? Can you collaborate across disciplines?
- Does your team include researchers from other disciplines? If not, seek consultation from another disciple in the college.
- Can you adapt to different roles on a team and be either the leader or a follower? Are you open to different ideas from others?
- Request feedback from your current team and advisor to identify improvement ideas.

2 - Develop Your Professional Network

Networking is an objective of this symposium. A strong professional network takes time to cultivate, but its value and quality get better with age. Your network can be a great source of encouragement, career advice, research guidance and it can even open the door to your next job opportunity.

- Cultivate your current network while you are still at Ohio State. Identify key people you want to connect with before you graduate. You have access to the faculty and scientists at one of the premier research institutes in the country. Have you taken full advantage of these experts? Explore ways to strengthen your OSU network and then take it with you into industry. You are joining a tremendous buckeye alumni community.

- Reconnect with the faculty and colleagues from your undergraduate program. You needed the support and endorsement of your previous university when you applied to Ohio State. Have you maintained these relationships? How about your former colleagues and classmates? How many of them are in PhD programs and may have relevant research experiences and ideas? Perhaps some of your old colleagues have been working in industry while you have been pursuing a higher degree. They may have industry contacts in their companies that can help you get your next position.

- Once you begin your career, develop your internal network within your new organization. The senior scientists in technology driven companies or institutions can be tremendous resources. It is important to know them and to be known since the
scientists are typically consulted by Research Management for performance input on new talent in the company. They should have deeply connected networks, which can be leveraged to guide you to a key expert and open the door for an introduction.

- Do not limit your network to your company, but extend it across your industry. There are many excellent companies, research institutes and associations. Find the relevant industry associations for your field of expertise and get involved. Strong alliances can be formed by serving on committees with colleagues across the industry in organizations such as AIChE or SPE.

3 - Find a Mentor or Coach

We often have more valuable resources available to us than we truly realize. One of the objectives of developing a good network is to identify potential mentors. A good mentor, or coach, can serve as a confidential advisor to you for a project, a role or an entire career.

- Do you currently have a mentor? How about a family member, professor, or technical advisor? As you begin your career, your new supervisor or a senior technical leader in your area may initially be your coach. Ultimately, you will benefit from seeking a more experienced, like minded leader who can provide career guidance.

- A good mentor will impact you professionally and personally. Once you have this experience, you have a new challenge awaiting your response. Who will you mentor? How will you help others succeed? Are you willing to pay back this gift or are you willing to start “paying forward” today, before you graduate?

4 - Learning Never Sleeps

As doctoral candidates, most of you have spent the majority of your lives in an academic environment. I will presume that you enjoy learning and have a high level of intellectual curiosity. As engineers, we are taught how to learn throughout our academic experience, and then apply those lessons to new and different challenges during our professional careers. To get started,

- Develop a learning / personal development plan with your faculty mentor or advisor. What skills, experiences or knowledge do you wish to gain before you graduate?
When you begin your professional career, develop a similar plan with your new supervisor and mentor. Focus initially on the skills and experiences you need to develop in the near term to accelerate your early career development.

A wise friend once told me: “You are either growing or regressing. There is no such thing as maintaining the status quo.” Think about this for a minute. This is relevant to our intellect and all aspect of our lives. If you exercise regularly, you already understand this principle. Just take a week off and see if your next workout is more difficult. It will be, because you are not maintaining your conditioning, but starting to decline. As you graduate with another degree, remember your lifelong learning journey should continue. Only the venue has changed.

5 – Develop Business and Financial Literacy

As Chemical Engineering PhD candidates, you have spent the better part of the past ten years developing your research and technical skills. Your technical know-how and your ability to perform top quality research are probably your greatest attributes and they are highly valued in the research community. As you transition into industry, these skills will also be evaluated on the economic value you bring to your new employer. Industrial companies measure the financial return on their R&D investment and tend to spend more R&D resources in applied product and process research that can yield results in the near or mid-term time horizons. Larger R&D investments are commonly made in markets and technologies with a strong profit potential. Longer term, fundamental research is performed in industry, but many companies also leverage universities, consortia, research institutes and government agencies for fundamental research.

- Publically traded companies run on earnings and the prospect of credible, future earnings. You may want to explore a technology purely for the academic value of the science, but the decision makers in your company will study the return on investment and probability of commercialization success. Determine how you will generate earnings and value from your new research to payback the research investment and sell the value to your leadership.

- Develop your business and financial acumen so you can effectively make a value case for your research. Give your leadership a compelling business reason to invest in your research over their other options.
6 - Even Researchers Need to be Sales Professionals

People who pursue careers in Engineering and Research exhibit a passion for science and technology. We are excited by new ideas, new technologies and even the pure fundamentals that support them. Perhaps we even believe a great idea or breakthrough technology should sell itself. In reality, most great ideas are “ahead of their time” and need a strong champion to keep them alive while the technology development catches up with the concept. As technology champions, you must be able to promote the benefits of your research, during the normal ups and downs of R&D work.

- Learn to effectively promote both your ideas and yourself. Develop a short “elevator speech” to introduce yourself, and promote the benefits of your research. Sometimes you only have 30 seconds to tell someone about your research and why they should support it. What will you say when the CEO gets on the elevator and the door closes?

7 - Character Counts

We live in a fast paced world filled with the pressure to succeed and deliver immediate results. The global competition can be fierce and everyone strives to be the first to the marketplace with a new product or technology since this is an advantaged position. It is very difficult to put innovation on a project timeline, but it is done every day in industry. In this environment, there may be temptations to take ill advised short cuts, inappropriate risks, or even manipulate the data to get the desired test results. In other words, you may be tempted to “cheat” in pursuit of a breakthrough. This is a boundary condition that should never be crossed. Integrity and honesty are priceless and once compromised, cannot be easily restored. My encouragement to you is to stay true to your scientific training and principles. Engage team members and objective colleagues to validate your data and results. There are ethical and legal implications of the choices we make every day and the adverse affect on your personal reputation and the reputation of your company can be immeasurable.

Perhaps your career ambition is to be an entrepreneur who launches a start-up company from your ideas and technology developments. If so, then listen very closely. Venture Capitalists examine hundreds of potential companies in pursuit of the right investment opportunity. One of the key success factors for a venture capital investment is their assessment of the inventor or key leader and their leadership team.

- Do they believe in the leader and their team? Will they believe in you?
Successful Transitions from Graduate School to the Marketplace

- Have you shown yourself to be trustworthy in your research and your work?
- Have you mastered your craft as a research professional and do you have a reputation for credible results?

8 - Develop a 100 Day Plan

The day will come when you graduate and formally begin your career at your new company or university. The first day on the new job can be overwhelming. You will meet a lot of people, have lunch with your new boss and only remember a fraction of the information you are told. There is so much to learn and so much to do that it is a challenge to know where to start. My simple advice is to look toward the Oval Office. No, not the Oval on campus but the Oval Office of the President of the United States. The news media tracks the president’s actions for the first 100 days and then extrapolates the results to an outlook of the four year term. Performance in the first three months sets the tone with your colleagues and leaders, so develop a short term plan for success before Day 1. Ask yourself the following questions:

- What are the most essential actions and experiences I need in the first 100 days?
- Which people should I meet? Which relationships need to be cultivated right away?
- What are my new leaders’ plans and expectations of me?
- What skills and attributes does my new leader value and how will you demonstrate them through my work?
- What is required to be successful in my new role?
- What is the culture of my new company and team?

As you heard in my brief introduction, I have had many different roles during my career at Dow. I learned very quickly that some of the skills that helped me succeed in a particular function or job level would not necessarily help me excel at the next level. I have applied this 100 Day Plan concept to transitions in the workplace and also in my personal life. The approach can help you distill the change and challenges into manageable, short term pieces. It also provides a mechanism to objectively assess your progress during the transition phase. As the author Marshal Goldsmith wrote, “What Got You Here Won’t Get You There”. The sooner you discover the gap, the faster you can make an impact in your new role.
Successful Transitions from Graduate School to the Marketplace

9 - Attitude Affects Altitude

Research is a noble and challenging profession. Many experiments fail and projects are abandoned. Everyone will face adversity, failures and times of frustration during their careers. This is true in life and not just limited to a career in research. The circumstances we encounter are typically beyond our control. While we cannot control our circumstances, we can control our response and our attitude. Our attitude has an impact on our colleagues, teams and everyone around us. A positive, encouraging attitude is contagious and lifts the spirits of a group when faced with adversity. The opposite is also true. Consider the attributes you value in a team member or leader.

- Will you have greater job satisfaction and deliver your best work in a positive, encouraging work environment?
- Will you be more willing to risk failure for possible breakthroughs if your team and leader support you?
- Do you share successes, offer praise, take responsibility for mistakes, or set a positive tone for the group?
- Attitude does affect the altitude or ultimate success for you and your team. How will you impact your current and future teams?

Successful innovators, like Thomas Edison, understand a failed experiment is just one more way to NOT solve a problem AND one step closer to the solution. Successful researchers need to learn from failure and continue exploring.

The research journey may be long, with the final destination well into the future and seemingly out of reach at times. A dead end path often turns into an alternate route filled with new possibilities. Persevere through the difficulties and disappointments, because we learn the most through these experiences. I encourage you to find joy in the journey, and not just the destination. It leads to a much more rewarding career.

Closing Remarks

It is really hard to believe that my Ohio State Chemical Engineering class celebrates its 30th anniversary this year. I am suffering from a severe case of denial. My journey has included many routes and intermediate destinations which I did not envision when my career began. I can honestly say with conviction that I continue to enjoy the journey and look forward to the next milestone. I wish the same for each of you.
Successful Transitions from Graduate School to the Marketplace

My objectives this morning have been to challenge you to think about your future and offer both guidance and encouragement for your successful transition from graduate school to a professional career. I learned the value of each of these principles over a period of time through personal experience and wise mentors. Hopefully some of these recommendations will motivate you to take action over the coming months. If so, I will reflect back on the keynote address and know it was beneficial.

As we transition to the main event of the research symposium, I encourage everyone to make the most of today. There are many outstanding posters and presentations to explore. You can even apply the principles I shared this morning. For example,

- Take full advantage of the learning opportunities – excellent research is on display
- Network and meet some new colleagues – perhaps your next mentor is here
- Collaborate by encouraging others and sharing your ideas to improve their research
- Sell your ideas and research – perhaps future investors are in attendance

Thank you again for the opportunity to address a wonderful group of distinguished colleagues. It is my privilege to initiate today’s research symposium and I am confident it will be a great success. On behalf of The Ohio State University and the Dow Chemical Company, thanks for attending and Go Bucks!