Convocation Speech (H. N. Cheng)

Thank you for the introduction. It is a great pleasure to meet all of you, the new graduates. Your dedication, hard work, and perseverance have led you to this significant milestone in your lives. You have gotten an excellent education here, and you are now among the highly select group of people who hold a chemistry degree from Illinois. Congratulations. Simply seeing all of you brings back fond memories of my days as a student here. I myself graduated in 1974, precisely 50 years ago. I may not look like it, but (trust me) I was once young and energetic, just like you. Now my hair is becoming gray, and I am aging gracefully like a vintage wine, but with much less enthusiasm.

I remember, it was in 1969 that I got my Bachelor’s degree in Chemistry at UCLA. Back then, I was a pretty good student. I had a grade point average of 3.88 and had finished college in three years. I had applied to 6 graduate schools in chemistry and was accepted by all of them, including Illinois, Berkeley, MIT, and UCLA. They all gave me good offers, but I chose to come to Illinois, and I never regretted that decision. Illinois was an outstanding school for chemistry, and still is among the very best in the world. (Do you all agree?) I learnt a lot here, scientifically and professionally, just like you did. It has prepared me very well for a productive career, and for you as well, I’m sure.

Let me tell you what happened to me after I left Illinois. Like many Illinois graduates before me, I worked for industry after my PhD. Industrial life was pleasant, but after 1 year I got scared. Why? Because there were lots of industrial chemists out there, research work was proprietary, and publication was not encouraged. So, nobody knew me in the chemistry profession. I could see myself being lost in a large crowd after a few years.

This was where I learnt *my first lesson*. What is job security? Job security is your ability to find your next job. And the secret to success is to become the best in your field. What do I mean by being “the best”? For example, if you are the best synthetic chemist in the U.S., you will do very well. Actually, you don’t need to be the best in the U.S.; you will do well even if you are the best in your region or in your place of employment. And you just need to be the best (or among the best) in a more specialized area like the synthesis of steroids or the production of quantum dots. You’ll be recognized for your work, and you will do well.

With that knowledge, I worked hard. I was not willing to settle for mediocrity, and wanted to excel in what I did. But then I learnt *the second lesson*. Just being a workaholic was not enough. People looked at me as either crazy or foolish, or both. I needed to set goals, so that my work could produce tangible results. That’s when I set a goal to publish 3-4 papers a year from my extra efforts. In the 30 plus years that I worked in industry, I was fortunate to have many interesting assignments, including management of large groups (twice), new business development, analytical chemistry, and product development in biotechnology and in pulp and paper chemistry. I developed products that made money for the company. I became a senior research fellow, the highest scientific position in the company. But throughout all those years and all those jobs, I worked at night, kept up with the research in my field, and published an average of 3-4 papers a year.

In the meantime, the world is changing. On the negative side, many chemical companies have cut back on basic research and emphasized shorter term product development. On the positive side, I came across an opportunity that I found promising, and that was green chemistry. As we know, traditional polymers and chemicals can sometimes pollute the environment, and some of the chemical processes can be hazardous. Yet, with green chemistry, we can solve some of these problems. So, I gradually moved my research to green chemistry and the use of biobased materials to make polymers. I also collaborated with friends at US Department of Agriculture (USDA), who worked in this field. In 2009, when there was a job opportunity on green chemistry at USDA, I actually took a substantial pay cut and worked for USDA. I am not sure if my wife liked the idea of a pay cut, but thankfully I have a wonderful wife, and she came along with me.

And this led me to *the third lesson*. The world is changing and opportunities are changing. We need to change and adapt to new situations. In my case, I love working at USDA, and my publishing output has also increased. Two years ago, I made another change. I “retired” from USDA but stayed on as a “collaborator.” This means that I can continue my research on green chemistry, but I don’t have to deal with a lot of bureaucracy and paperwork. You may wonder why I don’t just quit and enjoy my retirement. (Well, sometimes I wonder myself.) The truth is that I love what I do and do what I love. I feel that I am making a contribution, a very small one perhaps, by helping to reduce plastics pollutions and microplastics in the world.

Let me mention briefly two experiences I've had involving Illinois. For a long time, I’ve been active in the American Chemical Society (ACS). In 2021, I was elected by ACS members to be ACS President. I was told that I was the 26th Illini chemist to serve as ACS President. Since its founding in 1876, ACS has had about 130 Presidents over the years. Thus, about 20% of ACS Presidents have hailed from Illinois. This is a remarkable percentage, and it speaks volumes about the tremendous leadership and the quality of education provided by the chemistry department here in Illinois.

Another experience that I had was the opportunity to coordinate campus recruiting for my company a few years ago. I visited several universities, and (of course) one of the schools was Illinois. These trips enabled me to compare the students from different schools. I am happy to report that the quality of Illinois students was equal to or better than the students at all the other schools that I visited. I have always been proud of Illinois, and that experience strengthened my conviction.

So, it is wonderful to return to Illinois and meet the wonderful new graduates today. Please remember that you have been educated at one of the best chemistry schools in the world. Wherever you work in the future, academia, industry, or government, remember never to settle for mediocrity. Whatever business you are in, try to be the best in that business. Make sure to set goals and be adaptable. Above all, work hard, and make us proud!