

Symposium on Science: Frontiers in Chemistry
Monday, November 5, 2018
Breakthrough Theatrette, Level 4, Matrix, Biopolis

Opening Remarks
Prof Jackie Y. Ying
*A*STAR Senior Fellow, NanoBio Lab*
Chair, Symposium on Science

Mr Chua Chor Huat, MOE Director, Sciences Branch, Curriculum Planning and Development Division,
Distinguished Speakers,
Teachers, Students and Colleagues,

Good morning and welcome to the second Symposium on Science. ‘Frontiers in Chemistry’ is our focus this time, and NanoBio Lab is delighted to organize this symposium with the strong support from MOE.

This is the second time that we are working with MOE’s Curriculum Planning and Development Division to organize the Symposium on Science. Last year’s symposium focused on Biology, and we had over 130 participants.

Today, we have three leading professors, who will share the latest research advances in Chemistry. We hope that their talks will inspire you and give you a better understanding of how the A-Level curriculum can be relevant to real-life challenges that researchers are trying to tackle.

Teachers play a very important role in shaping their students’ lives. Indeed, it was my high school Chemistry teacher, Mr. Williams, who sparked my interest in this subject. He was great at helping us grasp Chemistry intuitively.

My professor in freshman Chemistry, John Bové, never needed any notes when he taught. It was amazing how he knew his organic chemistry inside out. He recruited me to do chemistry research in the third week of my freshman year, and the rest is history. I not only changed my major from Electrical Engineering to Chemical Engineering, but also pursued my Ph.D. in Materials Chemistry.

Over the years, I applied chemistry to multidisciplinary research. For example, my lab worked on developing stimuli-responsive delivery of insulin using glucose-responsive materials that we had synthesized. This material can be introduced orally or by nasal passage, and releases insulin automatically when the blood glucose level is high. It bypasses the need to prick one’s fingertips to

test the blood sugar level, or avoids the need to inject insulin. That technology went on to become a spin-off called SmartCells. In 2010, it entered pre-clinical trials and was then sold to Merck for USD 500 million. This is the type of impact that we want to achieve. As researchers, we hope our work can make a difference to millions of patients.

15 years ago, we started the Youth Research Program at the Institute of Bioengineering and Nanotechnology (IBN). Our goal was to broadly reach out to the students to get them interested in scientific research. It was my colleague Noreena AbuBakar's brainchild, and we reached out to more than 114,000 students and teachers from 290 schools through various activities, such as open houses, seminars, career fairs and workshops.

We also provided students with hands-on experience through research attachments. Over 2,670 students and teachers have conducted full-time research at IBN and NanoBio Lab for at least 4 weeks. More than 190 of them have gone on to win scholarships for further studies in science, engineering and medicine.

Today, NanoBio Lab works at the intersection of science, engineering and medicine to develop new nanocomposites, biomaterials, devices and biosystems. The first two topics involve chemistry heavily. Besides conducting cutting-edge research, we aim to spin off companies as an incubator.

We look forward to sharing our research with you during the lab tours after the lectures. We also hope that you would encourage your students to apply for research attachment at the NanoBio Lab. Of course, we also welcome the teachers to do research attachment with us.

They say that it takes a whole village to raise a child. We believe that the community should contribute towards the training of young talents. We look forward to working with you to nurture future generations of scientists, researchers, innovators and entrepreneurs for Singapore.

Last but not least, I would like to take the opportunity to thank the organizing committee, Noreena AbuBakar, Nidyah Sani, Nor Azzah Isnin, Jerry Toh and Benjamin Tai for all their efforts in coordinating this symposium. Special thanks go to Benjamin Choo and Stephanie Jee from MOE for their great help.

Thank you very much.