TUM Asia

digest

A quarterly newsletter from the German Institute of Science and Technology — TUM Asia

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director's message

Photo: TUM Asia

The last quarter of every year is always a season of celebration as we see Christmas drawing in and the year coming to a close. To add to our festivity in 2012, we hosted Prof. Wolfgang A. Herrmann, President of TUM and his delegation in Singapore as TUM Asia celebrated her 10th Anniversary.

To achieve a decade of providing quality German education to the masses of Singaporeans is indeed a feat, and this would have never been possible by our efforts alone. We have much to be thankful for, especially the unwavering support of our partners – varying from governmental to academic and industrial – and our students, who have believed in our mission.

To convey our gratitude, we held various events over the weekend of 16 November 2012 to honour and thank all those who have stood by us over the years. A dinner at Raffles Hotel was hosted by Prof. Herrmann and I, as well as a special TUM Alumni Stammtisch at Paulaner Bräuhaus. Both events have been covered in this issue of *Digest*, you can find the articles on pages 4 to 9.

Another occasion worth noting was when I flew to Munich to witness the first cohort of Bachelor students make their way to TUM to carry out their thesis work. It was a proud moment as I saw them adapt to a new culture and environment, and truly making the best of their experience. The *Digest* team interviewed a couple of the students who are currently in Munich, and you can find out more on page 12.

There are so many memorable events that took place over the last quarter of 2012 that I will not be able to cover all of them. *Digest* has selected some of the stories to publish and you can read about them within this issue, or log on to our Facebook page to read about the events not covered in *Digest*.

As we close the chapter of the first 10 years in Singapore, we await to discover what the next chapter will hold as we build upon the success of the first decade. Once again, I would like to thank every student, alumni and partner who have believed in us and stood by us. We look forward to more successful partnerships in 2013, and I would like to wish every reader a Happy New Year. Have a successful 2013 ahead.

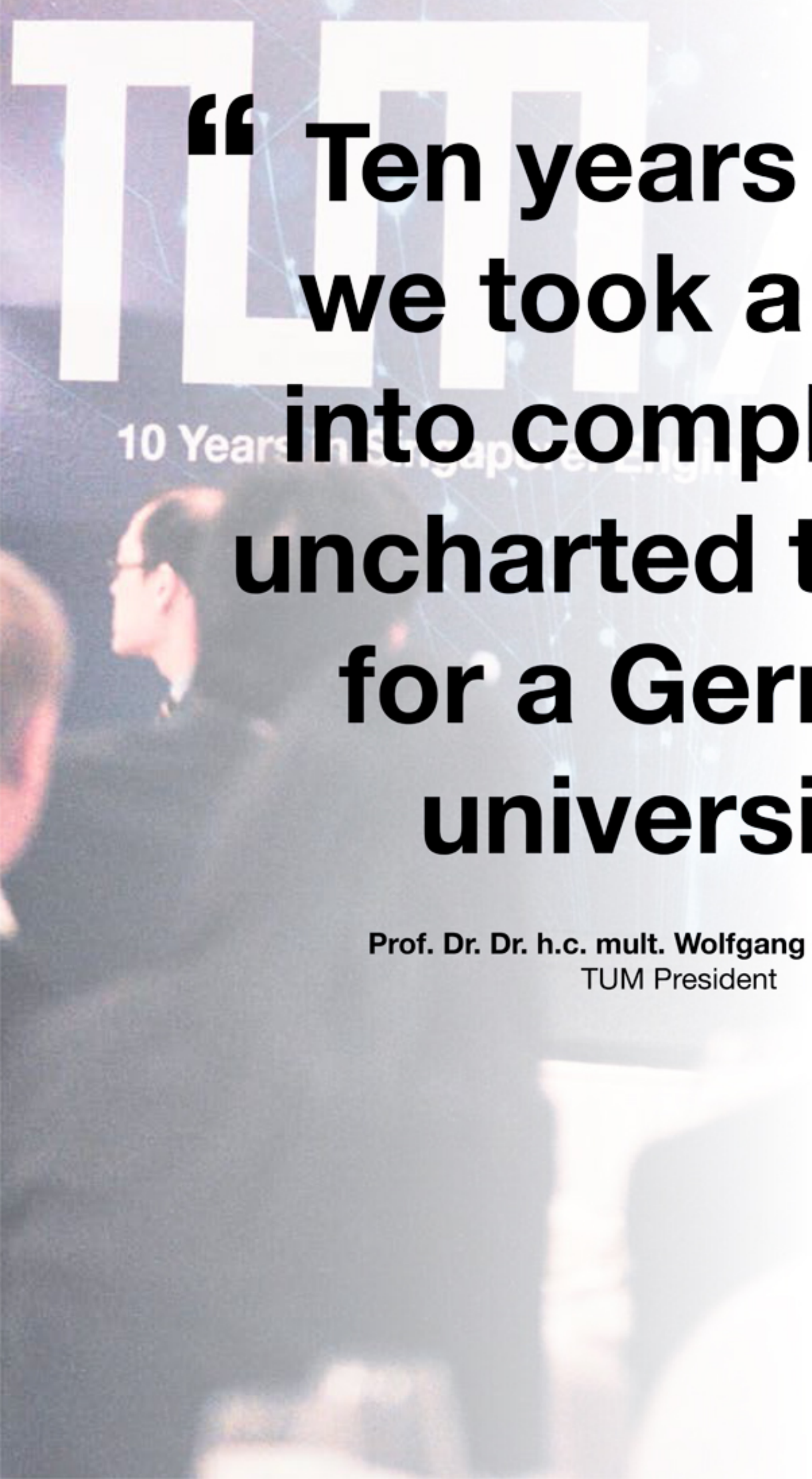
Yours Sincerely,

Dr. Markus Wächter
Managing Director, TUM Asia

Photo: TUM Asia / Kfotografix

FEATURE

10th Anniversary Dinner



“ Ten years ago, we took a step into completely uncharted terrain for a German university.

Prof. Dr. Dr. h.c. mult. Wolfgang A. Herrmann
TUM President

”

CELEBRATING A DECADE IN ASIA

Prof. Herrmann proposes a toast to his guests. Those in attendance include Mr. Tan (Asst. Managing Director, EDB Singapore), Prof. Andersson (President, NTU), Her Excellency Mrs Viets (German Ambassador to Singapore) & Prof. Marcus (Nobel Laureate).

Photo: TUM Asia/ Kfotografix

TUM Asia hosted its 10th Anniversary Celebration Dinner at the iconic Raffles Hotel on 16 November 2012. TUM President, Prof. Herrmann, and TUM Asia Managing Director, Dr. Wächter, hosted the dinner with numerous academic and industry partners in attendance.

The historical significance of the venue reflected the cause of celebration—the engrafting of premium German engineering excellence into an Asian country, known to be Southeast Asia's knowledge and learning hub, and one of the fastest rising countries in the world.

TUM, short for Technische Universität München, was invited by the Economic Development Board (EDB) Singapore to set up a campus here in Singapore under the Global Schoolhouse Initiative in 2002.

Prof. Herrmann took up the invitation and pioneered the founding of the German Institute of Science & Technology—TUM Asia, offering relevant engineering courses to build up a young and industrious generation of Singaporeans. Ten years forward, TUM Asia has become a premier destination in the region for graduate studies in engineering courses.

This milestone would have never achieved if not for the unwavering support of academic, government and industry partners. Present at the dinner were representatives from Nanyang Technological University (NTU), National University of Singapore (NUS), Singapore Institute of Technology (SIT), EDB Singapore, BASF, EADS, Infineon, Lantiq, Rohde & Schwarz, ST Kinetics and Volkswagen, to name a few. Gracing the special occasion was also Her Excellency Mrs Angelika Viets (Ambassador of the Federal Republic of Germany to Singapore), Mr Alvin Tan (Assistant Managing Director, EDB Singapore) and Prof. Bertil Andersson (President, NTU).

The guests present were taken through a short video that summarized the achievements of TUM Asia over the ten years, followed by a welcome address by Prof. Herrmann.

As part of TUM Asia's continual commitment in education to the nation of Singapore, Prof. Herrmann announced the launch of the part-time Master Programme and/or Graduate Diploma in Transport & Logistics—designed to meet the demand of skilled labour in supply chain management in the region, as well as the "Building The Future" project, in collaboration with The Straits Times Pocket Money Fund (TSTPMF).

This "Building The Future" project aims to foster interest in technology and the natural sciences among children from less privileged backgrounds.

Each year, two schoolchildren with outstanding grades in Science will make their way on an all-expenses paid trip to Germany to attend the Lindau Nobel Laureate Meeting. They then get their first taste of scientific research at the Berchtesgadener Land research center for schoolchildren.

Her Excellency Mrs Angelika Viets and Mr. Alvin Tan also took the stage to give their address and congratulatory speech after each course of the dinner was served.

A pleasant surprise came when Prof. Andersson gave an impromptu speech and awarded Prof. Herrmann with a honorary doctorate, conferred by NTU.

By the time dessert was served, the dining suite was filled with chatter and one could easily spot the happy smiles on the faces of the guests.

As the guests took their leave, the corridor echoed with laughter and congratulatory remarks from the invitees to the TUM Asia team.

The first ten years have been memorable, and one can only imagine what the next ten years will hold.

Milestones

2002

(LEFT) President of TUM, Prof. Dr. Dr. h.c. mult. Wolfgang A. Herrmann, attending the inauguration ceremony of GIST – TUM Asia (RIGHT) Unveiling the Master of Science programme in Industrial Chemistry (Joint Programme between TUM and NUS)

2007

We celebrate our 5th year in Singapore with a successful 4th Master graduation, as we watch our presence grow in Asia & establish collaborations with partners across the industrial landscape.

2008

(LEFT) GIST - TUM Asia opens its new campus at Pixel. (RIGHT) A magnificient dusk overlooks the celebrations going on in our new campus building

2009

Two more Master programmes were added to TUM Asia's repertoire – Master of Science in Aerospace Engineering & Master of Science in Transport and Logistics

2010

A research contract was signed between TUM and Singapore National Research Foundation to set up TUM Create, the Centre for Electro-mobility

2011

In partnership with Singapore Institute of Technology (SIT), TUM Asia launched 2 Bachelor of Science programmes (Electrical Eng. & Information Technology / Chemical Eng.)

2012

(LEFT) Another milestone achievement as TUM Asia ushered in 146 students for its 10th intake of Master students. (RIGHT) TUM Asia sent their inaugural batch of Bachelor students to the home campus in Munich for 2 months of Bachelor Thesis work.

Photos: TUM Asia

TUM Alumni Stammtisch

(LEFT TO RIGHT CLOCKWISE) The Stammtisch in full swing; Prof. Hinrichsen catching up with an alum; A top-down view of the celebrations; Everyone wants a picture with the President; The President reflects the mood of the occasion.

"Prost!" cheered the attendees as they clunked their mugs of beer together. Gathered in on a rainy Saturday evening, TUM/TUM Asia alumni and students got together to enjoy an evening of company with their professors, friends and course mates. This Stammtisch was part of TUM Asia's 10th Anniversary celebrations, with TUM President, Prof. Wolfgang A. Herrmann as the Guest-of-Honour for the Stammtisch.

To celebrate the milestone achievement of 10 years in Singapore, there was no better way to mark the occasion than to celebrate over glasses of Bavarian beer. Excited to meet their alma mater's President and delegation, reservations for a place at the Stammtisch streamed in early, with more than 150 attendees at the event.

The Stammtisch was held in a private section of Paulaner Bräuhaus—the first and only German microbrewery in Singapore. Significantly, TUM is the only school in the world who boasts of its own brewery, and it was of great coincidence that the General Manager of Paulaner Bräuhaus Singapore, Mr Alex Buchner, is a TUM alum as well.

Throughout the night, the hall was filled with endless chatter and conversation as the restaurant was transformed into a multi-cultural exchange of experiences and stories. There were many distinctly different groups of alumni and students present. Some were TUM students on exchange in Singapore, others included TUM/TUM Asia alumni who are working in Singapore and Singaporeans who studied at TUM, as well as TUM Asia students who hail from China, India and Europe.

After a short opening address by Prof. Herrmann, the buffet line was opening and the bar served up an endless flow of Bavarian beer. Clinking of the mugs, laughter and spontaneous banter could be heard all around as the celebratory spirit swept over the hall. Students and alumni lined up for a picture with the President, who happily obliged to every photograph that was taken.

The Stammtisch concluded a weekend of celebrations for an important milestone in TUM Asia's history, and the happy faces seen across all the events could only represent the bright future expected ahead.

Photos: TUM Asia / Kfotografix

BASF The Chemical Company

In this issue on Industry Spotlight, we caught up with Professor Dieter Jahn of BASF during his 2-day stopover in Singapore. Read on to find out why TUM Asia enjoys strong industrial collaborations with the world's largest and most established chemical company.

What is your role at BASF? Could you also give us an overview of the key business units at BASF?

Prof. Jahn: My role in BASF is called Science Relations and we manage these inside and outside relations.

Outside functions are the relations we have with our partners, academia, research institutes, governments and even political ones.

The inside functions are to connect BASF researchers with the outside world, facilitating research projects, new corporations etc. The cooperation with TUM Asia was one of our projects in the past. I would also take this opportunity to introduce Dr. Thomas Weber. Because I will retire by the end of the year, Thomas will succeed me.

The key business unit at BASF is actually being "The Chemical Company" so we have a very prosperous business. We are delivering our products to all industries and I would claim that all major companies in the world are partners of BASF. We are producing more than 8000 products which are sold to the customers worldwide. Many products are sold to the customers and they use it internally to produce other end products.

Prof. Jahn, we would like to seek your opinion on the partnership between TUM Asia & BASF, a collaboration which has now entered its tenth year of success?

Prof Jahn: BASF has had the pleasure to partner TUM Asia from the very beginning and to start such a venture it is a real challenge indeed. This is because you have to create a brand from scratch, because TUM is not as well-known in Singapore as in Germany. It was a pleasure to support TUM Asia to create that brand, which is also based on the reputation of different institutions such as Technische Universität München, National University of Singapore, Nanyang Technological University and also many industries.

We understand that BASF has been an industry partner to our Master in Industrial Chemistry programme, and that many of TUM Asia graduates are now working in BASF. How would you rate the quality of our graduates?

Prof Jahn: The quality of these graduates are excellent and we are very happy with them. They are working in very diverse jobs and I am very proud to see that they are making their career in BASF. TUM Asia provides an internationalized environment for graduates to gain valuable experience as you have students who are born in other countries who come to Singapore to study and then go to Munich to intern/conduct research. It makes them even more sensitive to internationalization and that is an additional advantage of this program.

Dr. Thomas Weber: The quality is excellent of course, we are looking forward to hire more graduates in the future because we see Asia as an area of growth for BASF and we need more graduates. We also have ambitious goals of growing in research and development and this is also offering a chance to the graduates here.

Photos: BASF

As an experienced individual in the field of chemical engineering, what advice would you give to fresh graduates who are looking to join this industry?

Prof Jahn: We expect in the chemical industry to enjoy higher growth rate than GDP, so we know the industry looks very promising. We have an optimistic vision of the chemical industry in the future. We also expect that Asia will have a higher growth rate on the global average, thus indicating that the chemical industry is the industry of the future in this region.

What are the qualities a student must have to go into this industry?

Dr. Weber: Students with exposure to an international community, complemented by a good education and training. We also look for competence in technology and development of one's personal skills, soft skills, and communication abilities. The bachelor degree sometimes is more important than the master degree, because it is the fundamentals that you build on. I would add that personality is the key to work in BASF.

Do you have other thoughts and comments?

Prof. Jahn: I would like to congratulate all the people in TUM Asia for this success achieved in these 10 years. I know very well all the hard work that went into this achievement. I also would like to mention that we have a number of TUM Asia graduates in our company and we are happy with them. The system of a research-based education is a very good idea because one is able to transfer what he/she learnt into daily work.

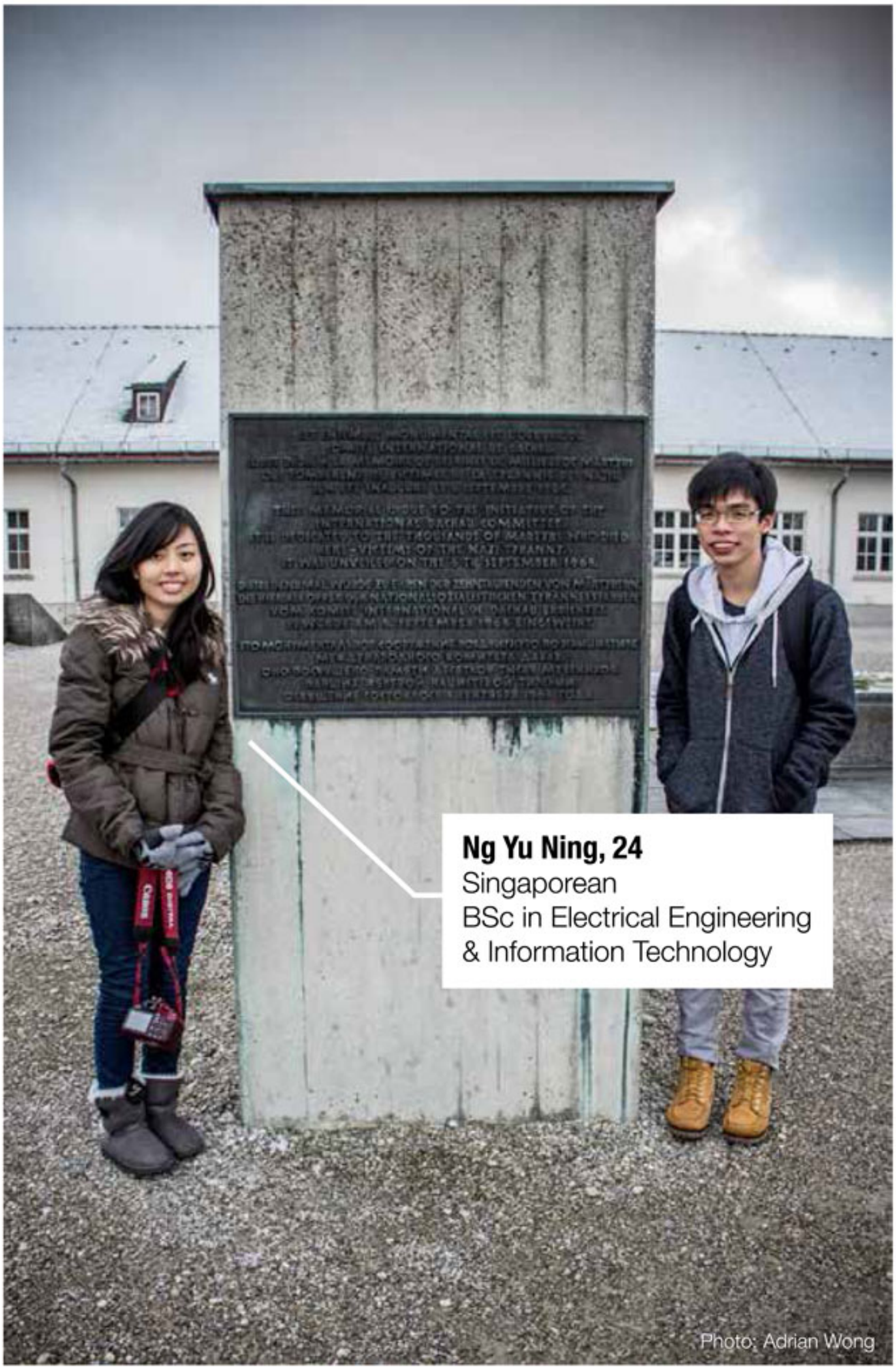
Student interview

Life in Munich

EXCHANGE IN PROGRESS

Photos: Adrian Wong and Huang Yilong

As part of TUM Asia's Bachelor of Science requirements, every student will complete a two to six month Bachelor Thesis in the home campus of TUM after they successfully complete their coursework. In October 2012, TUM welcomed the pioneer cohort of undergraduate students who flew half the globe from Singapore to Munich to embark on the final lap of their undergraduate journey. This being a momentous occasion in the history of TUM Asia, we caught up with some of the students to find out about life in Munich and their experiences thus far.



Ng Yu Ning, 24
Singaporean
BSc in Electrical Engineering & Information Technology

Photo: Adrian Wong

Photo: TUM Asia

How is life in Munich?

Yu Ning: This is my 1st time travelling across the globe alone and I must say it is definitely a whole new experience. Upon arriving in Munich, what really struck me was that Munich gives people a 'WOW' feeling. I can feel the difference between Munich and Singapore, as it is not as stressful in Munich, and people have been very friendly and helpful. It is a very safe city, you experience the seasons, and in summary – I'm loving it!

Wee Ping: Life in Munich has given me many first experiences, such as seeing snow, and Munich is a safe city to live. It is stressful for me because I have only 9 weeks to complete my thesis, but nevertheless, it has been a fruitful experience. One point to note, the food in Munich can be considered salty, and for us who are accustomed to a different diet, you may take some time to get used to eating potatoes, ham and wurst all the time!

Describe your experience at the TUM campus.

Yu Ning: The campus is very big and in my institute, the Professors and Ph.D. students are all very helpful and sociable. I am very amazed by the efficiency at TUM as well. On my first day of school, I already have my assigned desk and seat. When they found out that the laptop was too slow due to too little RAM, they changed it immediately for me!

Wee Ping: For the central Munich campus located in the city, it is historically significant. For TUM campus at Garching, it is very modern and you will see many students studying around the campus. Of course the most memorable experience would be the parabola slides at the Institute of Mathematik und Informatik. Just remember to use the carpet provided so you don't burn your jeans while sliding!

Is it hard to get around without being able to speak German?

Yu Ning: It is not hard at all as most of them are able to converse in English. Even if you think that they do not speak English, like in the supermarket, just look at the indicator and pay the correct amount. Till date, I haven't encountered a difficult situation!

Wee Ping: For me, I think it is advisable to learn basic German. Most situations are

ok, but there were some instances where the knowledge of basic German would be great. For example, if you're going to buy the season U-Bahn (Railway) card for students, you have to fill in the application form in German and communicate with the officer in German too.

What are some tips/advice you would give your juniors, who will go to Munich in the future?

Yu Ning: If they are coming in winter, make sure they bring enough clothing, because it can get really cold here. Proper boots are also important. Dairy products are cheap in Munich, even vitamins are cheap. But Asian food is scarce in Germany, so do bring some! Overall, if you are not a picky eater, you will be ok!

Wee Ping: For the EEIT juniors coming to TUM, Java, C++, and MATLab are the basic programming software skills that are necessary. For the typing of your report, the Germans use Latex instead of MS word. If you equip yourself with these skills prior, it will make your thesis work easier because you can spend more time on research rather than using your time to learn these basic skills.

Yeo Wee Ping, 25
Malaysian
BSc in Electrical Engineering & Information Technology

Photo: Yeo Wee Ping

Share with us the places that we must visit, and food that we must try if we are there!

Yu Ning: There are many places you should visit, like the Deutsches Museum (world's largest Science & Technology museum); Christmas Market (if you are here during the Christmas season); Black Forest; Swan Castle etc. Also, take this once-in-a-lifetime chance to visit neighbouring European countries. With regards to food, I think that the German sausages are awesome, and of course pork knuckle! Not forgetting what Germany is famous for: BEER!

Wee Ping: A general rule of thumb for places to visit in European countries will be MCC – museums, churches and castles. In & around Munich, I recommend the Swan Castle, BMW Museum & Production line Tour, Marienplatz and Neues Rathaus.
For food, you must try the Currywurst mit pommes (sausage & fries with curry sauce), Brathähnchen (roasted chicken) and many kinds of hams and cheeses. If you are a beer lover, remember this: Ein Radler,Ein Helles, Ein Weizen, and Hacker-Pschorr! You will find beer with different fermentation, from light to heavy.

Photo: Huang Yilong

Photo: TUM Asia

Alumni interview with Professor Robert Huber

In 1988, Professor Robert Huber was awarded with the Nobel Prize for Chemistry – together with his colleague and former doctoral student Johann Deisenhofer and Hartmut Michel – for researching the three-dimensional molecular structure of the reaction center of photosynthetic processes. Now, the 73-year-old scientist and TUM alumnus does his research at the Max Planck Institute for Biochemistry in Martinsried near Munich, at least when he is not teaching at Duisburg-Essen, Cardiff/ UK, Barcelona or Seville/ Spain or some another international research institute.

Prof. Huber, do you still feel connected to the TUM?
Yes, I studied at the Technische Universität München and became really engrossed in science there. My first lecturers from my basic courses and internships all have excellent reputations in scientific research. My mentor Walter Hoppe introduced me to crystallography. At the same time as I, Gerhard Ertl was a student of Heinz Gerischer at the Institute for Physical Chemistry – and that was still the time when the institute was directed by its founder Prof. Günther Scheibe. Our paths often crossed in the hallway of the building on the Luisenstraße. We were at Scheibe's institute at the same time – and were both awarded with Nobel Prizes later.

A successful age group?
Yes, you could say that. We conducted our research on molecules following various approaches. While I was trying to get to know the interior molecular structure by means of crystallography, Ertl was more interested in the surface structure. Nice, isn't it – that one of us was interested in the surface and the other in the core. I was awarded my prize twenty years before him for choosing to look inside. (laughs)

How do you feel when you visit the TUM nowadays?
Well, I studied at the Main Campus, Theresienstraße – so I tend to be more in a nostalgic mood when I am in the city center with all the old buildings, than if I am in Garching. Garching would need a few more touches to allow any nostalgia – more accommodation facilities for example, so that there would be more life on the campus also on weekends. But it's fantastic to see how much has been achieved already. The Catalysis Research Center that is being constructed – it's a massive building. I would like to congratulate President Herrmann for his assertiveness.

When did you start the research that led to the Nobel Prize?
We founded the research group soon after I was appointed to the Max Planck Institute for Biochemistry in Martinsried, 1972.
The group consisted of chemists, physicists and biologists. The Physicists focused on the methodological problems while the biologists were more concerned with the biological aspects. In general, chemists are more flexible and are able to do both. At first, there was the need for methods and instruments, so we developed our own machines. When we had the right methods and instruments, we were able to get to the core of the biological basis of the proteins – which is of great interest from a biological point of view.

Which questions led you to the Nobel Prize?
There was the question of how photosynthesis works inside a biological photo-cell. We use inorganic photocells in our cameras – but how do natural ones work, in plants or in photosynthetic bacteria?
To understand this, the components need to be first isolated and then crystallized so that we can analyze the structure. We managed – and in doing so, we did not only solve the question of biological photosynthesis, we also coped with the technical challenges.
After we were able to show that it is possible to analyze large proteins, more research in this direction emerged and even more complex proteins were studied. In the last ten years, a whole series of Nobel Prizes was awarded for the analysis of large protein complexes.

Two spin-offs are implementing your research results for pharmaceutical development. Is that a satisfactory continuation of your work?
Definitely. For the first company, Proteros – which has expanded quite a bit – there are two aspects:
At first, the company applies methods I developed in the early phase of x-ray crystallography.
The second aspect is the fact that 70 jobs were created. A number of graduate students from our group now have really interesting jobs.
The second company, SuppreMol, is so satisfactory because our academic research resulted in ideas on how to help patients with autoimmune diseases.

Finally, a more private question: Do you still go skiing?
Yes, I do – regularly – because there's a traditional winter seminar in Klosters in Switzerland, which goes back to a colleague and friend at the Max Planck Institute for Biophysical Chemistry in Göttingen, Manfred Eigen. I joined many years ago. Regularly, for about 25 years now, we meet in January to go skiing and to talk about our research.

The interview was conducted by Annette Marquard-Mois, TUM alumni relations manager. It's an excerpt from the TUM Alumni Magazine KontakTUM, issue 2/ 2010.

Photo: TUM/facesbyfrank

TUM School of Management Celebrates 10 Years of Success

Just 10 years old and the TUM School of Management is already one of Germany's most successful business management faculties. Unlike typical business studies courses, this unique Bachelor degree combines business studies with engineering and the sciences.

A typical day for the Technology and Management students include a lecture on business finance in the morning, followed by experiments in the chemistry lab in the afternoon. As well as learning management skills, these managers of the future spend 4 semesters studying chemistry, electrical engineering and information technology, mechanical engineering, and computer science. They attend the same lessons as their fellow students from other faculties. Businessmen and women who understand exactly how engineers work are in high demand in today's job market. At the celebration, TUM President Wolfgang A. Herrmann called the School "a unique success story, and a great tribute to the funding invested by the university and the State of Bavaria".

Source: www.tum.de/about-tum/news

Photo: Eckert / TUM

Photo: TUM Asia

Mid-Autumn Festival BBQ

The Mid-Autumn festival is one of the most widely celebrated festivals by the Chinese. Commonly represented by the fullness of the moon on the 15th day of the 8th month (Chinese calendar), the festival is marked by the gathering of friends and families to enjoy moon cakes, tea and the hanging of paper lanterns.

TUM Asia students gathered together on a Saturday evening to celebrate the Mid-Autumn festival. Combining cultures of the east and west, the traditional festival was celebrated with a barbecue. Laughing and chatting over the smoky barbecue pits, our European students enjoyed Asian barbecued food such as satay and otah, while our non-Chinese Asian students learnt to appreciate moon cakes, pomelos and the tradition of setting up your own paper lantern.

Public Transport Prioritization Workshop

Harnessing our expertise as a foremost institution in Science & Technology, a workshop discussing the future technology available for Bus Prioritization was held at TUM Asia over 19 and 20 November 2012. Professionals from the transport sector were invited, with the BMBF sponsoring delegates from neighbouring countries such as Malaysia, Indonesia and Thailand. Delegates from the various nations, including our speakers from Germany, completed the 2-day workshop with site visits to the various public transport depot sites in Singapore.

Photo: TUM Asia

Photo: TUM Asia / Kfotografix

Picture with the President

Decked in polo t-shirts and sporting great smiles, TUM Asia students gathered in for a picture with TUM President Professor Wolfgang A. Herrmann. Prof Herrmann was in Singapore for a weekend of celebrations for TUM Asia's 10th Anniversary.

Exams Hints Are Not Included

To provide some stress alleviation for the students, TUM Asia Communications Team set out to distribute some exam booster packs for the students studying for their exams.

Packed with goodies such as coffee packs, instant cup noodles and energy biscuits, the booster packs were designed to provide some cheers in the midst of the hectic revision.

Elation and appreciation were written on the faces of every student, and students even responded with pictures of themselves with their goodie bag — giving them the chance to win a bigger goodie bag packed with sweets flown in from Munich!

Photo: TUM Asia

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Inventor of the Refrigeration Technology

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