TUM Asia

digest

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

April - June 2013 Issue

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Cover Photos: Andy Sutanto (Photo 2) / TUM Asia (Photos 1 & 3)

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director's message

Photo: TUM Asia

The ushering in of the New Year is always symbolic of a fresh new chapter. Stepping into 2013, we were met with a rush of adrenaline as everyone geared up for the various activities designed for students and prospective students alike. Most notably, the appointment of the Singapore Institute of Technology (SIT) as the 5th university in Singapore is a strong affirmation of the quality education we are offering to the masses of Singapore. An unprecedented crowd turned up at our booth during the SIT Open House, and many also took time off to visit us at our TUM Asia Open House. The editorial team rounded up the activities in pictures on pages 4 and 5.

Our reputation as a premier institution is also strongly built on the foundation of innovation and entrepreneurship. In a bid to develop these values in our students, we selected some of our best students to attend the Nobel Laureate Youth Forum. The forum, held at the Singapore Science Centre, was extremely interesting and inspiring. Those who attended the forum were deeply stirred by the passion and energy of these Nobel laureates. Hear what the students have to say on pages 10 to 13.

Other events that took place in the first quarter of the year included our Career Essentials Workshop and inaugural in-house Career Fair. In particular, the Career Fair saw many of our industry partners take time out of their busy schedules to meet our students and graduates. This Career Fair created a platform for our students to seek out internship and career opportunities at global firms. To read more about the strong industry network we enjoy at TUM Asia, the full article can be found on pages 8 & 9.

It has indeed been a busy but fulfilling first quarter of the year where we have been focusing on our students and graduates. To add to the list of events we covered this quarter, I must also highlight the successes of our graduates. In this issue, you will find an interview conducted with an alum of the newest cohort of alumni. Somen Bhudolia, a graduate in the Master of Science in Aerospace Engineering programme, has achieved great career accomplishments shortly after graduation. The editorial team captured some of his thoughts on pages 14 and 15.

Over the last decade, we have always seen our students exceed the expectations set for them and I believe that the issue is a reflection of the tone set for us this year. The team at TUM Asia looks forward to the line-up of many exciting events and activities over the next few months, and we wish you the same success in the next quarter ahead.

Yours Sincerely,

Dr. Markus Wächter
Managing Director, TUM Asia

Open House Activities

"Must you be able to speak German?" was the most popular question asked by prospective students. The DIGEST team looks back on some of the memorable moments during this year's Open House activities.

(STARTING FROM TOP LEFT, CLOCKWISE) TUM Asia Managing Director, Dr. Markus Wächter sharing at Singapore Institute of Technology's (SIT) Open House; Our Bachelor of Science students chatting about school life with a prospective student; Our staff & students posing for a picture at the SIT Open House; A full crowd at the TUM Asia Open House; Goh Zhe Liang, a student in the Chemical Engineering programme, speaks with potential applicants

Photos: Andy Sutanto / TUM Asia

Career Essentials Workshop

A FULL CLASS: The workshop was attended by 100 students over 2 sessions. Students expressed their gratitue for the workshop and some remarked that it helped them gain confidence for job searches.

MORE THAN GRADES TO LAND THE JOB

Abraham Lincoln, once said "I will prepare and someday my chance will come". On the 19 of March 2013, we held an in-house Career Essentials Workshop for both our undergraduate and graduate students. This workshop aimed to prepare our students and graduates with the necessary skills to excel in the job search process. The workshop was divided into 3 segments: cover letter and resume writing, professional grooming and interview skill, to cover the 3 parts of job search process.

Preparing a good cover letter and resume is the first step to getting that "dream job". In addition, a Forbes article by Ms Jenna Goudreau, mentioned that job seekers are 40% more likely to get noticed with a professionally written resume. So for the first segment of the workshop, students were taught how to write their own cover letters and resume as well as avoid common pitfalls of a poorly written resume. The facilitator broke down the presentation into 2 sections, "Cover Letter Writing" and "Resume Guidelines" so that each portion could be discussed in depth thus facilitating better learning. Students were also able to receive 1-on-1 guidance on their resumes after the workshop.

According to AOL Jobs, in a survey of 2000 bosses, 33% claimed that they know within the first 90 seconds of an interview whether they will hire someone. With this statistics, students should know that a good first impression plays an integral part in landing that job. Therefore, for the second segment of the workshop, students were educated on the need for professional grooming. The facilitator shared practical tips on dressing for both the men and ladies, and also highlighted mistakes that are common but often go unnoticed. Most students commented afterwards that they enjoyed the personal touch of the presentation as they could comment and review each other's attires.

Although the first two parts of job search are important, the interviews ultimately determine if one will be offered employment. Therefore, during the last segment of the workshop, crucial information such as - the basic dos and don'ts of interviews, how to answer common interview questions and technical questions with professionalism – were shared with the students. Most importantly, the students were exposed to the underlying meanings of tricky interview questions, thereby helping them to better frame their answers. With all these covered, the interview skill segment was commended as the most useful segment of the workshop.

A survey was also conducted at the end of the workshop so that the students could provide feedback to the facilitators. All the participants indicated that the workshop was useful to them. They also gave an unanimous response to the suggestion for the workshop be organized for the next cohort. The participants also suggested ways to improve the workshop, for example, to have a segment to roleplay interviews during the workshop, or to have more examples on resume styles. TUM Asia Career Services team will definitely take all the suggestions into consideration while planning for future Career Essentials Workshops.

TUM Asia Career & Internship Fair

(STARTING FROM TOP LEFT, CLOCKWISE)
Students making enquiries at the A*STAR booth; Company presentation by Robert BOSCH; A student speaking with an Infineon representative; An information pamphlet given out to participants; Students approaching representatives from STMicroelectronics

On 1st March 2013, our Pixel campus was bustling with activity from visiting companies and TUM Asia students for the TUM Asia Career & Internship Fair 2013. Both levels of the campus grounds had been transformed into venues for the fair, with Level 3 used as the main location for the fair and the Level 1 rooms as the interview rooms.

15 companies from the various industries participated in the fair, offering employment and/or internship opportunities. Some companies that attended the fair included Lantiq Asia Pacific Pte Ltd, Micron Technology Inc, Robert Bosch (SEA) Pte Ltd and Flight Focus Pte Ltd. The students matched the occasion with by turning up in their professional attire and armed with their resumes.

As the fair commenced, students poured into the various fair locations with excitement. In no time, the companies' booths were surrounded by students with enquiries ranging from job availabilities to working environments. Participating companies commended the cosy setting and the sufficient space catered for interactions with the students.

Some students had also been pre-selected to undergo interviews with companies, for both employment and internship opportunities. Most of them had to go through technical assessments and group interviews. Ms Jane Wang, Human Resource Specialist of STMicroelectronics Asia Pacific Pte Ltd, said that it was very convenient to have interview facilities during the fair, so that the company can interview potential employees on the day itself.

In addition, some companies chose to give brief presentations in order to introduce the company's profile to the students. Ms Violette Chng, Manager of Talent Marketing & Diversity of Infineon Technologies Asia Pacific Pte Ltd, thought that the presentation slots were good because she could reach out to many students within one presentation. And for those who had more questions, they could easily consult her at the booth during the fair itself.

As this is the first time that TUM Asia has held an in-house career & internship fair with our esteemed industry partners, feedback from the companies was greatly welcome. Generally, the companies had good reviews of the fair and all of them indicated that they would like to return for subsequent career and internship fairs. More than 94% of the surveyed companies also agreed that TUM Asia students command quality that is higher than the industry average, revealing a preference for TUM Asia graduates compared to their peers. In all, both the prospective employers and employees were very pleased with the fair, and highly recommend for it to be held year-on-year.

Photos: TUM Asia

STUDENT FEATURE

Nobel Laureate Youth Forum

they did, even if they
do what they liked. „

Laureate Youth Forum 2013

Photos: TUM Asia

ONCE-IN-A-LIFETIME PICTURE:
TUM Asia students get up close with Prof. Robert Grubbs at the Q&A session.

Receiving the Nobel Prize is a dream of almost every scientist. But only the brightest minds among them receive this honour. In the beginning of 2013, selected students from TUM Asia were invited to the Youth Conversation Forum organized by the Science Centre Singapore in partnership with the National Research Foundation. This was a treat for the students as they were able to participate in conversations with the following five scientists that have achieved outstanding scientific feats: Cedric Villani (Fields Medals, Mathematics); Eric Cornell (Nobel Prize, Physics); Richard Karp (Turing Awards, Computer Science); Robert Grubbs (Nobel Prize, Chemistry) and Ada Yonath (Nobel Prize, Chemistry).

The forum was an eye opener for the TUM Asia students as they were able to delve into the worlds of physics, chemistry, mathematics and computers with the top minds in these fields. This was especially for the students majoring in Chemistry, who were thoroughly bedazzled when they met Prof. Grubbs face to face – as they have studied about his work on olefin metathesis extensively in their lecture notes.

But the most interesting portion of the conversation took place when the scientists was asked to share about their life challenges and on what made them choose the path that they took. In response to the question, all of them agreed that a common thread in their lives would be that most of them were not born with a silver spoon in their mouth.

One of them is Prof. Ada Yonath who was awarded the Nobel Prize 2009 in Chemistry. Prof. Ada Yonath mentioned that she started to work at the age of 11 to help out her single mother to support the family. Despite all the difficulties, Prof. Ada Yonath managed to complete her high school education and was enrolled to a university with the support from her mother and her strong desire in learning.

"Curiosity! Curiosity! Curiosity!"

This was Prof. Ada Yonath's reponse to a question on the keys of success for scientists. She also added that being persistent in your idea is another essential criterion to success. Despite encountering several obstacles and setbacks throughout her research life, she was not deterred from continuing on her idea.

In addition, Prof. Cédric Villani, the winner of the Fields Medal in 2010 agreed that the driving force in the research field comes from one's passion and curiosity. A striking statement mentioned by Prof Villani was:

"If you are concerned about earning big bucks, you might as well become a businessman."

Before the end of the conversation, the host then posed the most anticipated question to the laureates: How does one become a Nobel laureate? There was a book written named "Origin of Creativity" (2001) where it was concluded that a Nobel Prize winner bears 5 distinct characteristics: A strong will, aspiration, anxiety (doing things for pleasure), an angry rebellious nature (dare to do something different), and passion/interest. Nevertheless, the laureates present all agreed on one point: there is no defined recipe for a Nobel Prize winner.

After the conversation session, there was an informal Q&A session that allowed the students to post questions to the laureates. Even though some questions were tricky and sometimes controversial, it was impressive to observe the patience of the speakers, who were generous with their in-depth explanations and stories. It was indeed a warm sight to see Nobel laureates sparking a thirst of knowledge in these budding scientists of tomorrow.

Though 3 hours were hardly sufficient to get to know these laureates and truly comprehend their achievements, the students were happy that they could get a glimpse into the lives of these renowned scientists. They were glad to be able to enquire about their paths of success and its obstacles, which in turn encouraged the students to continue their pursuit in science and research.

In no better words, the inspiring journeys of these scientists can be summed up in this sole statement, "They liked what they did even if they did not get to do what they liked".

Article contributed by:
Amrith Girihar, Goh Zhe Liang, Dr. Jennifer Ziriakus & Lee Poh Sein

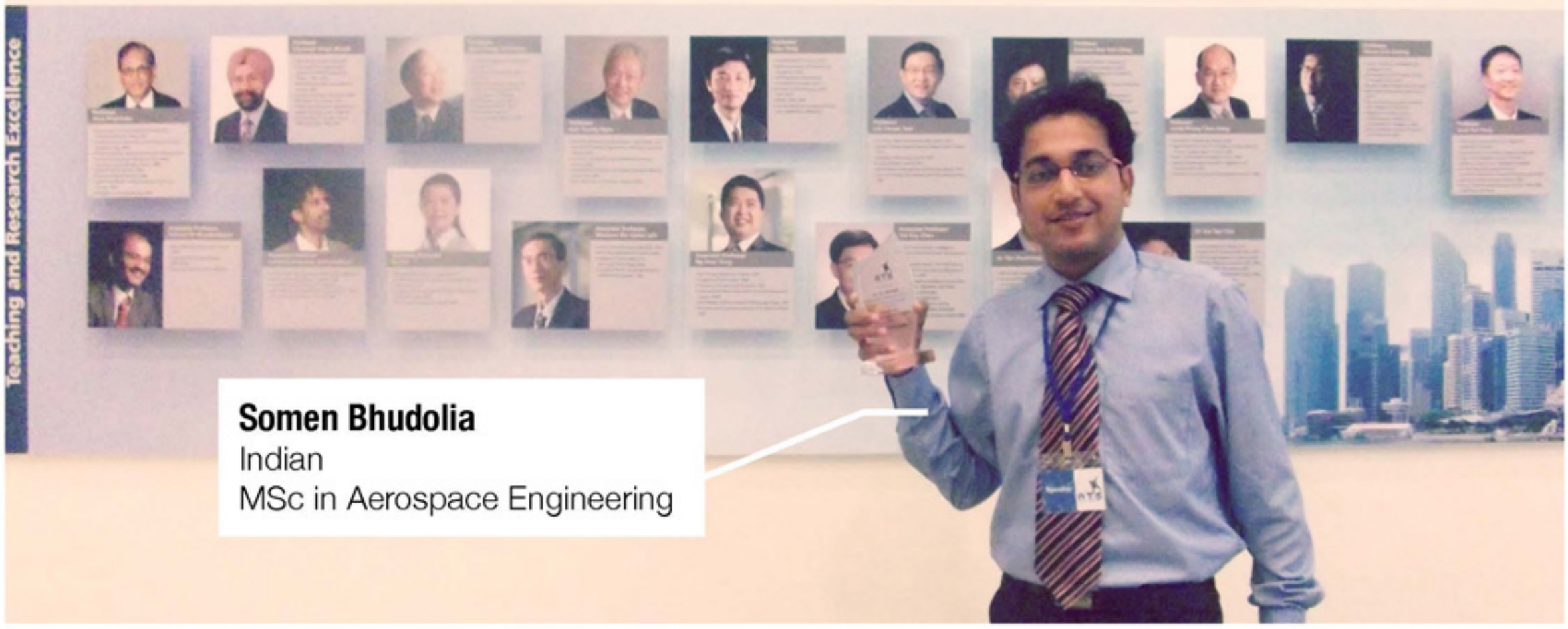
Nobel laureates on scientific work:

"It is good to have plenty of ideas, be it good or bad, but work on the bad ones & move on from there."
"Many inventions were supposed to be something but instead it could be best used for something else."
"Knowledge is the practical application of science."
"Luck is important, so happens that you found something interesting, grab it!"
"Ask yourself this, if we solve this problem, will people be interested in the answer?"
"Teaching enables you to channel what you know & sometimes discover flaws in what you might have known before. Teaching is the best way to learn."

ALUMNI INTERVIEW

Somen Bhudolia

PEAKS OF EXCELLENCE



In this issue, we speak with Somen Bhudolia, a TUM Asia graduate, on how his fascination with aeroplanes sparked the biggest decision of his career and where it has taken him to date.

SPECIAL MOMENT:
Somen and his classmates from the Master of Science in Aerospace Engineering programme at the Mars-3D Exhibition in 2011.

MILESTONE ACHIEVEMENT:
Somen made his first international conference presentation in 2012 with his Master Dissertation research work.

Photos: Somen Bhudolia

Hi Somen, to start, could you tell us how the idea to pursue Aerospace Engineering came about?

Somen: Hi Digest. Well, there is a phrase that goes "An optimist will tell you the glass is half-full; the pessimist, half-empty; and the engineer will tell you the glass is twice the size it needs to be". This phrase has always been the driving force and inspiration for me to pursue engineering as a career. I remember in my childhood days, I was always keen about the logic behind the working of machines like automobiles, aeroplanes, bicycles etc. To me, the invention of flight by the Wright Brothers is arguably the greatest invention by human beings after the fire and wheel. I was the kid who would sit by the airport and watch planes go by. That curiosity on aeroplanes naturally shaped my decision to pursue engineering at the Bachelor level and even though I majored in Mechanical Engineering, I took time to read up on pressure, thrust and airflow studies as well as books on fundamentals of flight. And after I graduated, I took up the Master of Science in Aerospace Engineering degree and the rest is history.

Where has your journey in Aerospace Engineering taken you?

Somen: I had many opportunities to network with TUM professors and industry partners during my graduate studies. The opportunity I cherish the most was when I visited the Mars-3D Exhibition by the German Aerospace Centre (DLR) held at Singapore Science Centre on 16 February 2011. This turned out to be an excellent opportunity to meet distinguished scientists, researchers, academicians and industry partners. It was a huge milestone in my journey as I was able to to share my research interests to like-minded researchers and scientists, as well as increase my industrial contacts.

We understand you graduated in 2012, where are you working now?

Somen: I was privileged to be accepted as a Research Associate in Nanyang Technological University in Singapore after graduation. I am currently working in the field of research with regard to aerospace technologies.

We received news recently that you have written 2 international conference papers to date. Could you tell us more about the papers you have written and presented?

Somen: The first paper that I presented was my Master Dissertation work on *"An Innovative Microwave-Thermal Energy-Efficient Curing Approach for CFRP Composites"* at the Singapore Aerospace Technology & Engineering Conference (SATEC) 2012 on 13 February 2012. The second presentation, regarding my work on *"Strain Gauge Calibration of a Non-jettisonable Aircraft Pylon: An Analytical and Experimental Approach"*, was presented at the Aerospace Technology Seminar 2013 at National University of Singapore on 1 March 2013. Both had international audiences present and it was a great honor to see my research validated.

Did your Master degree help to shape your career path?

Somen: Yes. In order to pursue a career in the field of my interest, it was necessary to study and understand the finer nuances of the subject on hand. The Master degree by TUM and NTU did just so for me. To be able to study under the tutelage of faculty members who have done considerable research in my area of interest, I have been greatly enriched with knowledge that is not easily obtained. The period of work on my Master Thesis also helped to shape me as a researcher, and the constant encouragement and motivation I received from my professors and peers have affirmed my decision to follow this career path.

Last but not least, could you name a memorable moment during your studies at TUM Asia?

Somen: I think it would be hard to name one moment. I would definitely say that the time spent with my classmates and professors at TUM Asia is easily one of the best times of my life. My cohort was nothing less than a family. I still remember how we would go for a daily meal with our visiting professors from TUM and we would talk to them about everything. Those were fantastic memories that I will never forget. I also thoroughly enjoyed my orientation at Sentosa in 2010. That might possibly rank as my favourite moment in my 2 year journey.

High-strength fibers from spider silk

TUM spin-off AMSilk presents first artificial spider silk fibers

(TOP TO BOTTOM) In the pilot plant of the Research Center for Industrial Biotechnology at TUM, researchers develop efficient processes for the production of spider silk protein; Bobbin with recombinant spider silk

AMSilk, a spin-off of the Technische Universitaet Muenchen (TUM), has produced the world's first artificial silk fiber that is entirely made of recombinant spider silk proteins. The fiber's tensile strength is comparable to that of natural spider silk, which led to the name Biosteel. The present fiber prototypes are smooth to the touch and pleasant to the skin, and they shine like silk. They are brilliant white and can be dyed with common techniques used in the textile industry. Applications for Biosteel may include high-performance technical textiles, sporting goods, medical textiles and surgical products, such as meshes and other support textiles or wound coverings.

The AMSilk Biosteel® fibers are produced by a scalable spinning process. This process is based on inventions of Thomas Scheibel, who developed the biotechnological production of spider silk protein at the TU Munich. He is now Professor of Biomaterials at the University of Bayreuth.

Other important steps on the way to spider silk fibers were studies in collaboration between Professor Scheibel and the research group of Professor Horst Kessler, Carl von Linde Senior Fellow at the Institute for Advanced Study at the TU Muenchen (TUM-IAS). In 2010, the researchers discovered the molecular prerequisites for the assembly of the fiber in the spider's spinning gland. 2011 they unveiled the molecular mechanisms responsible for the enormous strength of the spider silk fiber.

"Of all the many applications for spider silk, the spinning of a viable commercial fiber has always been technically the most challenging. With the current process, we have shown that a commercial spider silk fiber is possible," explains Lin Roemer, Head of Research and Development at AMSilk. "Next we will optimize the fiber further and scale up raw material production and spinning in our new pilot plant."

Parallel to further development of the fibers, AMSilk is now intensifying its raw material production. For this purpose, the company cooperates with Professor Weuster-Botz, Professor of Biochemical Engineering at TUM. In the pilot plant of the Research Center for Industrial Biotechnology in Garching, researchers are working on new, more efficient processes to produce silk proteins for industrial applications with good quality at low cost.

"The shareholding of the spin-off AMSilk is an extraordinary step for universities," says Dr. Alexandros Papaderos, head of the patent and licensing office of TUM. "Forerunners like AMSilk help to inspire students, researchers and alumni to entrepreneurial thinking and acting."

Source: www.tum.de/about-tum/news (Photos: AMSilk)

Technische Universität München

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Photo: Uli Benz / TUM

TUfast: World Class Racing Cars

The TUfast Racing Team – which consists of TUM students – is working on a racing car that is supposed to compete on the world class stage. Every year, the team takes part in the international Formula Student Cup with a self-designed car. TUfast is currently third in the world rankings. The goal for 2013 is to win the German Formula Student Cup in Hockenheim.

In February 2013, TUfast celebrated its 10th anniversary with a celebratory visit by the TUM President to their Garching site. TUfast has constructed a total of 13 race cars during the last ten years. Because the Formula Student is an engineering competition, it is not simply about trying to be the fastest. The cars compete in eight categories. For example, the acceleration is measured over a distance of 75 meters and the lateral acceleration is measured while driving in figures of eight. Another category is based on driving 22 kilometers at a stretch. "This is where around 30% of the cars fail," says Stefan Fischer, TUfast's Team Leader of Organization. "There is a change of driver and the engine is turned off. After that, several cars don't start up again."

Source: TUMstudinews

Stammtisch: Prost!

The Stammtisch has been touted to be the most powerful opinion-shaping institution in Germany. Traditionally, the Stammtisch is an informal group meeting held on a regular basis, and also the (usually large, often round) table around which the group meets. In the countryside, this tradition used to be where villagers discussed issues on politics or other topics. Today, people around the world use the Stammtisch as an occasion to gather under common interests or as a community. As a German institution, we carried the tradition over to our alumni, professors and students here in Singapore. In March 2013, we organized our first Stammtisch of 2013, with over 40 attendees comprising of TUM Asia staff, students, alumni and our visiting professors from TUM.

Some of our students have never tried German Bier before and they were surprised how good it tasted when their drinks arrived. It is always a great sight to see the professors and students come together to talk and laugh over life. For our foreign students, they appreciate the community found in the friendships they share across disciplines and with their professors.

It was a fun and relaxing evening, and as always, we look forward to the next Stammtisch! Prost!

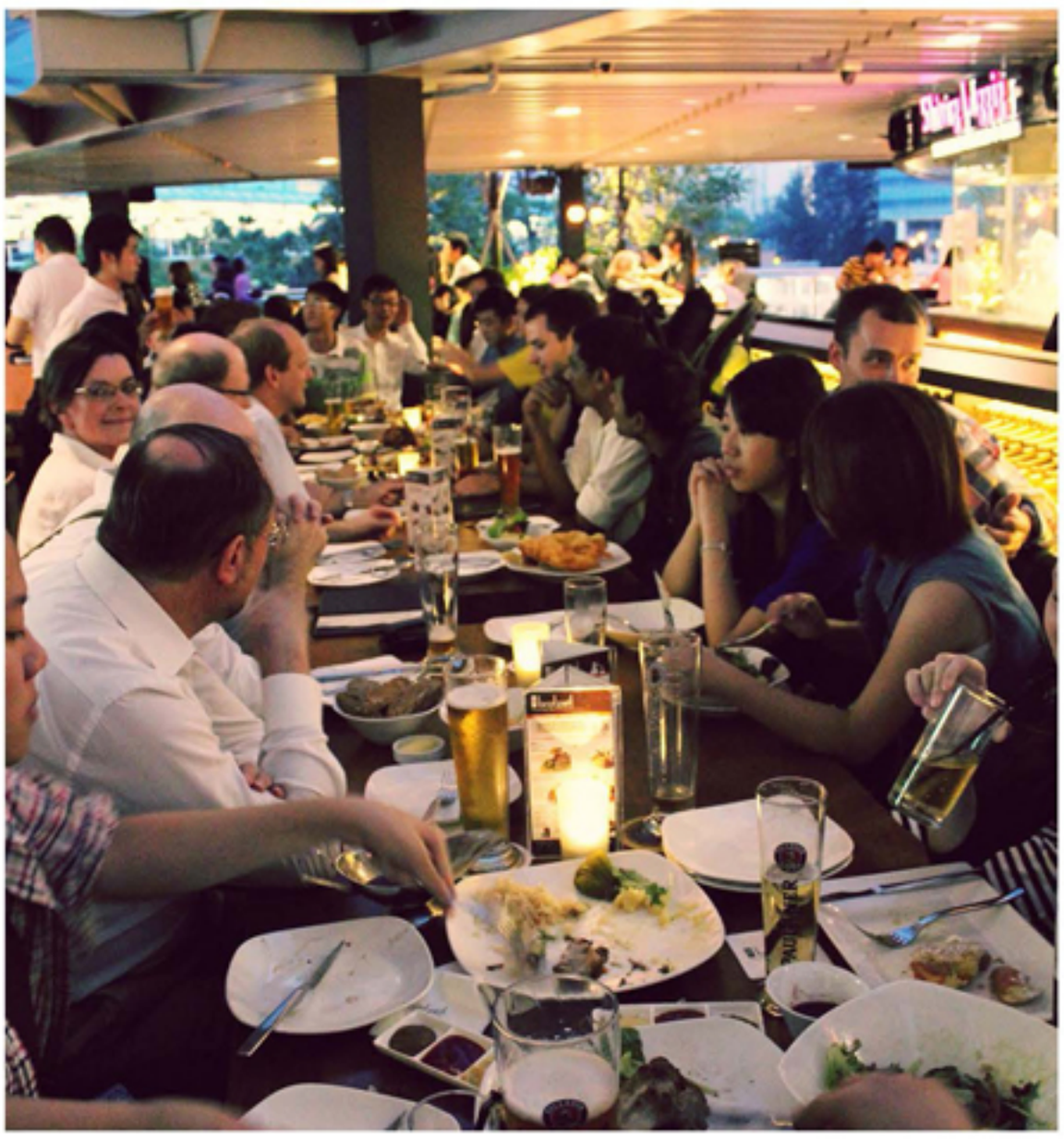

Photo: TUM Asia

Photo: Andreas Heddergott / TUM

TUM President Re-election: A Unanimous Vote

Wolfgang A. Herrmann will remain at the helm of Technische Universität München (TUM) for six more years. In a secret ballot, the Supervisory Board unanimously re-elected the incumbent President on 21st February 2013. President Herrmann is the longest-serving President of a German university, having led TUM for 17 years. The numerous reforms introduced during his tenure have made TUM what it is today: an outstanding international university with an entrepreneurial spirit. The highlights of Herrman's term of office include TUM's recognition as a "University of Excellence" in 2006 and 2012.

Herrmann has overseen a re-organization of the research environment at TUM. Greater interfaculty collaboration is being encouraged with a view to solving global challenges in areas like energy or mobility. Important milestones include the establishment of the Institute for Advanced Study (2006) and the restructuring of four faculties to create the Weihenstephan Center for Life and Food Sciences, Land Use and the Environment (2000). In 2009, the TUM School of Education became Germany's first faculty for teacher training and education research. TUM's efforts to improve the quality of its teaching have been recognized on numerous occasions, notably under the German government's "Teaching Quality Pact" (2011). Other efforts include the rise of female professors from 7 to 88 members, and the rise in student population from 18,000 to 32,500.

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

Fancy A Cup of Tea?

On 5 March 2013, TUM Asia organized a Tea Session with our Bachelor of Science programmes' applicants. Applicants and their parents were able to hear from Prof. Ulf Schlichtmann (Electrical Engineering & Information Technology) and Dr. Jennifer Ziriakus (Chemical Engineering) regarding the programmes' modules and course structure. Applicants were also able to address concerns such as, "Do I have to speak German?", "What is it like to live in Munich?", "What will I be doing when I fly over to Germany?" etc. Our current students were also on site to chat with applicants on school life, and many were glad that they could interact with our students on a first-hand basis. It was a fruitful session, and we hope to see some applicants join the TUM family in July!

Photo: TUM Asia

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Carl von Linde, TUM Alum
Inventor of the Refrigeration Technology

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*Academic Ranking of World Universities (National Rank) 2011 & 2012

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