

# KontakTUM Magazine

For Alumni of the Technical University of Munich  
Spring/Summer 2020

# Sustainable

Ideas for today  
from within  
the TUM Family.



# WHAT REMAINS

TUM Alumni Werner Grützner (Diploma Architecture 1967) can look back on an eventful and successful life as an architect and a family man. He has now given part of his study materials to the TUM.Archive.

The foundation for Werner Grützner's success is his degree from TUM with its "excellent professors and helpful assistants". Ever since his Golden Diploma in 2017, Werner Grützner is donating 150 euros to the TUM University Foundation every month to support young talents. As a pre-mortem bequest he recently left a part of his study materials to the TUM.Archive, among them his old study log, including his student ID, exam papers and certificates, as well as more than 60 designs he drew as part of course work. Find the whole story at [www.150.alumni.tum.de/en/werner-gruetzner-en](http://www.150.alumni.tum.de/en/werner-gruetzner-en)



Dr. Ann Katrin Bäuml, head of TUM.Archive, accepts the pre-mortem bequest from TUM Alumni Werner Grützner. TUM.Archive has been documenting the success story of the Technical University of Munich for over 150 years. The focus here is on a vivid visualisation in its scientific, cultural, political and social connections.



The non-profit TUM University Foundation was founded in 2010 by patrons from business and society with the aim of providing continuous support for the Technical University of Munich and to promote excellence. Since then, many new benefactors, especially from the ranks of the TUM Alumni, have joined the foundation, which is now one of the largest university foundations in Germany.

[www.tum-universitätsstiftung.de](http://www.tum-universitätsstiftung.de)



Dr. Sabrina Eisele and Dr. Verena Schmöller  
from the KontaktTUM editorial team

## Time to Rethink

While the corona pandemic is profoundly turning our lives upside down, the Earth is enjoying a break. The restrictions on public life result in fewer cars on the roads, significantly less air traffic worldwide, and travel is massively restricted, if not suspended entirely. Already, this is leading to a significant reduction of carbon emissions.

This Alumni Magazine issue is dedicated to the topic of **sustainability**. When we planned the magazine, we could not anticipate the current developments. But perhaps this time can be taken as an experiment: **which of the many activities we have always insisted on are really necessary? How can we reorganise our everyday life – and simultaneously maintain a healthy and stable economy, which is the basis of our social and medical prosperity?** For our round table on sustainability we have brought together four experts: they discuss what needs to change in society so that we can safeguard what makes our world worth living in.

The second part of the magazine contains, as usual, our extensive programme of events. This time the focus is on online offers and webinars, which you can attend from the comfort of your home.

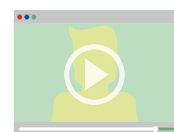
We are particularly looking forward to welcoming you in person again soon and wish you a read that inspires hope.

### TUM-internal Expertise on the Coronavirus

How contagious is the virus? When will drugs and vaccines be available? Doctors from TUM and the Klinikum rechts der Isar regularly give assessments of the virus and the pandemic in the media. The latest reports (mostly in German language) can be found at [go.tum.de/580143](https://go.tum.de/580143)

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All of Alumni & Career's online events can be found at [www.together.tum.de/events](https://www.together.tum.de/events)

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As many events had to be postponed or cancelled at short notice due to the corona pandemic, this KontaktTUM issue does not provide the usual index of events and offers. Updated information can always be found here:

Alumni & Career events and online services:  
[www.together.tum.de/events](http://www.together.tum.de/events)

TUM calendar of events:  
[www.tum.de/en/university-life/events](http://www.tum.de/en/university-life/events)

University operations at TUM during the pandemic:  
[www.tum.de/coronavirus](http://www.tum.de/coronavirus)



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KontaktTUM  
online



in English and German  
[www.together.tum.de/en/news/epub/](http://www.together.tum.de/en/news/epub/)



# SETTING A GOOD EXAMPLE



Almost three decades ago countries from all over the world agreed for the first time on targets for more sustainable development and climate protection at the United Nations Conference in Rio de Janeiro. It is now considered a milestone in the integration of environmental and development efforts. That was in 1992: I myself had just completed my studies in Food Chemistry and was on my way to TUM in Munich, where I was offered an exciting doctoral project in the Department of Chemistry. I remember that topics related to environmental protection and sustainability as a social concern, increasingly became the focus of chemical research and from playing a marginal role in political events before, developed into a topic that concerned all of society.

A lot has changed since then: the buzzword sustainability has now reached the centre of society, and I am convinced that in the future our university will have to be more strongly measured by what we, as a guiding intellectual force in society, do for its sustainable development – on an economic, ecological and social level – and how we contribute to achieving the Sustainable Development Goals of the United Nations. As President of TUM, in office since October 2019, it has been important to me from the very beginning to anchor sustainability as a guiding principle in our future development agenda.

## BECAUSE WE HAVE THE POTENTIAL

As one of the best technical universities in Europe, we see it as our social obligation to contribute with our research and innovative technological developments to the health of our planet and the coexistence of people. We have the necessary potential to do so. We employ top scientists from all over the world who, in interdisciplinary teams and with top-class equipment, set true innovations in motion. TUM is the only university to have developed electric cars ready to drive, for varying climatic zones on three continents, and with different concepts for use. At TUM Campus Straubing for Biotechnology and Sustainability we research the efficient use of biogenic raw materials in chemical, material and energy recycling as a contribution to a sustainable supply of resources and energy. We are working on the catalytic conversion of CO<sub>2</sub> to methane and chemical valuables, such as speciality chemicals, active ingredients and polymers. At the Munich School of Engineering, architects and civil engineers are cooperating on the topic of sustainable planning and construction, as considerable amounts of carbon can be saved in the con-

struction sector. At Schneefernerhaus on Zugspitze we are investigating the influence of climate change in the Alps. In Berchtesgaden, TUM and the National Park are researching the Alpine ecosystem under the influence of climate change.

We also work in EU-funded Knowledge and Innovation Communities on sustainable food production, developing sustainable mobility concepts and innovative approaches to tackling climate change. And we have just set up a new administrative unit for sustainable development at TUM to centrally embed the topic of sustainability, to critically reflect on our organisational and campus development, and to address potential for development. Since last year, we have been awarding the TUM Sustainability Award to trailblazers in science, who combine technological innovations, social responsibility and entrepreneurial action in an environmentally friendly manner. For the future generations of scientists, these are highly visible role models.

#### ARCHITECTS OF OUR FUTURE

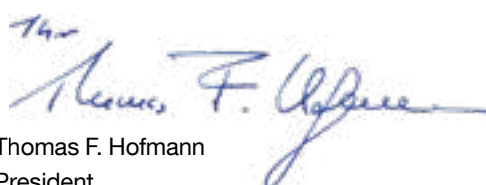
The future belongs to the young generation – our students! That's why sustainability is an integral part of all our programmes. These range from sustainable construction, hydraulic engineering, land use, intelligent energy systems, materials research, power plants and energy conversion to health and prevention, as well as political and social sciences. More than 40,000 students were enrolled with us in the winter semester 2019/20, and around 9,000 highly qualified graduates receive their Bachelor's or Master's degree every year, contributing their skills and talents to science, business, politics and society. They are the architects of our future. It is therefore our moral mandate to equip this young generation with the necessary skills to allow them to make sustainable decisions for our world and for humanity.

They will follow the lead of our foresighted and conscientious alumni, who contribute their technical expertise to the development of environmentally friendly and resource-efficient innovations, establish 'green' companies that operate with energy efficiency, get involved in research and political bodies, collect data to calculate sustainability scenarios, and much more. As world citizens, taking responsibility on a global scale, they make a significant contribution to the further development of society. Within the framework of our TUM Network they are role models and advisors for all of us.

#### TOGETHER WE CAN DO IT

At the heart of the Rio de Janeiro Conference in 1992 was the so-called Agenda 21, based on the idea that sustainable development can only be achieved through cooperation between all players in our society and the world. Looking at TUM today, I am proud of how much we have already put this principle into practice and how readily the entire university community is willing to shape our future together. We are aware that we have numerous tasks ahead of us. But we are tackling them together,

# BECAUSE WE CAN.



Thomas F. Hofmann  
President

# HOW TUM PROMOTES SUSTAIN- ABILITY

A task force, a green campus, research and teaching on sustainability: here you can see at a glance what is happening at TUM in terms of sustainability.





# Sustainability Task Force

An exciting new development at TUM is President Thomas F. Hofmann's decision to set up a Sustainability Task Force. The task force is preparing a roadmap on how TUM can continue to strengthen its already well developed research and teaching in this area. Key elements will be a mapping of existing activities in teaching, research and public relations, as well as the development of first steps to enable TUM to reduce its own ecological footprint.

The new task force is headed by Prof. Dr. Miranda Schreurs from the Chair of Environmental and Climate Policy. She outlines the topics that are now of importance for TUM.



## Bringing Sustainability to TUM and to Society

As a university with a strong focus on technology, TUM is well positioned to play a leading role in the field of sustainability. For this reason, the Task Force intends to initiate new activities in the field of sustainability, both on the TUM campus and between TUM and external parties from politics, civil society and the industry. Interdisciplinarity and broad participation will be crucial for the development of the strategy for sustainability. In coordinating and implementing sustainability measures, the Task Force will also be supported by the newly established sustainability unit.



## Integrating Sustainability Into University Operations

Sustainability is also important to TUM with regard to its operational and building management. It focuses on energetic renovation, energy monitoring and the use of renewable energy. Over the past few years, a significant reduction in energy consumption has thus been achieved. With more than 15,000 students and 3,500 employees, TUM's campus in Garching is already one of the largest campuses in Germany. If the growth of recent years continues, a realignment of its energy supply will soon be necessary. Within this framework, an innovative energy strategy is to be developed as part of the CleanTech-Campus project, funded by the Federal Ministry for Economic Affairs and Energy. The aim is to integrate the existing and new buildings into a highly efficient structure for supply and, increasingly, regenerative energy generation.



## Pooling Areas of Expertise on the Respective Campus

Each TUM campus features specific areas able to contribute to the topic of sustainability. TUM Campus Garching could become a laboratory for sustainability technologies. TUM Campus Straubing (pictured above is the new laboratory and lecture building for Sustainable Chemistry) will be a leading player in Biobased Economy. At TUM Campus Munich, the focus will be on projects combining technology, politics and society, for example for urban sustainability. TUM Campus Weihenstephan already plays a pioneering role in terms of sustainability in agriculture, science and resource planning. TUM Campus Heilbronn has enormous potential when it comes to the links between digitalisation, artificial intelligence and sustainability.

# Sustainability in Research

TUM conducts research in a wide range of future-oriented fields related to sustainability. Since sustainability transcends the boundaries of individual research areas, the majority of research projects have an interdisciplinary approach. This interdisciplinary work is already firmly anchored and institutionalised at TUM, for example in the integrative research centers TUM Institute for Advanced Study, Munich School of Engineering and Munich Center for Technology in Society. In these, scientists from various departments collaborate with leading international researchers.



## EXAMPLE 1

### Architecture With Reference to the Conditions of Nature and Life

**TUM Professor Francis Kéré** from the Chair of Architectural Design and Participation is mostly working on developing strategies for Climate Responsive Architecture. He is internationally renowned for his innovative designs, in which he combines traditional building materials with modern engineering technology. Beyond the boundaries of his field, he is recognised for his ecologically sustainable architecture, which adapts to the natural conditions and lifestyles of its inhabitants.



## EXAMPLE 2

### Management Strategies for Climate Protection

The Amazon Rainforest stores large quantities of the climate-damaging greenhouse gas carbon dioxide. Deforestation, agriculture and rising temperatures are pushing this tropical forest's ability to store carbon dioxide to its limit. It is not clear how long the forest will remain a carbon sink. In an international team TUM **Professor Anja Rammig**, from the Professorship of Land Surface-Atmosphere Interactions, is working towards answering this question. For her research she uses model-based analyses in combination with observational data. The models are used to estimate future changes in the ecosystem on a regional and global scale, and to develop management strategies for climate protection and adaptation.



## EXAMPLE 3

### Comparative Climate Policy, Environmental Politics, and Low-Carbon Energy Transitions

The research focus of **TUM Professor Miranda Schreurs**, from the Chair of Environmental and Climate Policy, is on international and comparative climate policy, environmental politics, and low-carbon energy transitions. Among other things, she does research on energy system transformation in Japan and Germany, climate policy in Europe, the USA and Asia, and the politics of high-level radioactive waste disposal. In 2011 Chancellor Angela Merkel made her a member of the Ethics Committee for a Secure Energy Supply.



## COOPERATION IN KNOWLEDGE AND INNOVATION COMMUNITIES

In so-called EIT-KICS, TUM is working on the sustainable production of food (EIT FOOD), develops sustainable mobility plans (EIT Urban Mobility) and innovative measures to tackle climate change (Climate-KIC). The Knowledge and Innovation Communities, KICs, are legally independent partnerships of universities, research centres, companies and other stakeholders, which address topics relevant for the future and society, selected by the European Institute of Innovation and Technology (EIT). To this end, the participating partners develop new products, training concepts or services and stimulate the start-up scene in Europe.

## TUM Sustainability Award

A new addition to TUM in 2019 was the TUM Sustainability Award. With this award, the President honours innovative research with the potential of making a decisive contribution to the ecological transformation of our economy and society. Its first recipient is Prof. Dr. Thomas Brück from the Werner-Siemens Chair of Synthetic Biotechnology. Among other things, he received the award for his groundbreaking research at TUM's Algae Cultivation Centre. The algae studied there not only produce bio-fuel, but can also be used to very efficiently produce carbon fibre. Meet Thomas Brück at our Round Table on Sustainability (p. 14) and attend his lecture for alumni (p. 46).



## ON TOP OF THE WORLD

At an altitude of 1,262 metres in the forest above Berchtesgaden, TUM is conducting research on the Alpine ecosystem. At the Friedrich N. Schwarz Research Station, the great diversity of habitats in the Berchtesgaden National Park receives special attention. Together with the Schneefernerhaus on Zugspitze, TUM's research infrastructure covers alpine altitudes of up to almost 3,000 metres. Educational research in Berchtesgaden is testing concepts for successful science lessons in schools based on observing nature. The findings will be directly incorporated into TUM's teaching degrees. The three-storey research station is largely self-sufficient, operating with treated rainwater, a biological clarification plant and solar energy. Financed by the TUM University Foundation, the new building is named after one of its patrons: TUM Alumni Friedrich N. Schwarz was a student of Electrical Engineering at TUM and subsequently pursued a corporate career.





## NEW PRIORITIES FOR CLIMATE PROTECTION

Together with the Technical University of Denmark, TUM formed the EuroTech Universities Alliance in 2006. Today, the alliance is a strategic partnership between six of the best technical universities in Europe: Denmark's Tekniske Universitet, Technische Universiteit Eindhoven, École Polytechnique Fédérale de Lausanne, École Polytechnique, The Technion – Israel Institute of Technology and TUM. Together they have set the goal of finding technical solutions to the major challenges facing modern society. Since 2015, one of the focal points of the collaboration has been the use of intelligent, groundbreaking technologies to help protect the environment in the new digital world. For the implementation of the project, TUM and its partner universities are setting the following priorities: sustainable society, AI for technical systems and additive manufacturing.

# Sustainability in Education

At TUM, the topic of sustainability is an integral part of research and teaching in all 15 faculties. The spectrum ranges from Sustainable Building (Architecture), Hydraulic and Water Resources Engineering and Land Use (Department of Civil, Geo and Environmental Engineering), Smart Energy Systems (Munich School of Engineering / Electrical and Computer Engineering), Materials Research and Power Plants (Mechanical Engineering), Energy Conversion (Chemistry and Physics) to Health and Prevention (Medicine and Sports, and Health Sciences) and Social Dialogue (TUM School of Governance).



### EXAMPLE 1

#### **Master's in Ecological Engineering**

Graduates of the Master's programme in Ecological Engineering are experts in Ecosystem Management. Through their studies they are enabled to identify conflicts in land use and effects of land use on ecosystems and to develop and lead interdisciplinary environmental planning.



### EXAMPLE 2

#### **Master's in Sustainable Resource Management**

The interdisciplinary Master's programme Sustainable Resource Management at the TUM School of Life Sciences in Weihenstephan is dedicated to the sustainable use of the natural resources soil, water, air and biodiversity.



### EXAMPLE 3

#### **Master's in Consumer Science**

The Master's programme Consumer Science at the TUM School of Management provides expertise in the field of consumer research: its graduates analyse how consumers make decisions and which variables, for example, promote more sustainable choices.

# Student Initiatives

TUM students are involved in numerous projects, initiatives and associations – from student business consultancy to development cooperation. Frequently, they are also committed to focus on sustainability and actively shape their own future. The students apply the knowledge gained during their studies and in doing so, train their entrepreneurial thinking and conduct. At the same time, friendships and networks across Europe and the globe develop.



EXAMPLE 1

## **Environmental Department of the TUM Student Council**

The Environmental Department of the TUM Student Council is organising numerous projects on environmental and sustainability issues. One of the highlights is the lecture series 'Environment', which, this year, takes place for the 70. time. Speakers from research, environmental organisations and business provide information on environmental technology, health, as well as on consumer and climate protection (see p. 46). The students have also developed their Vision 2030, in which they call for a green campus design and a university that is self-sufficient in energy.

[asta-umweltreferat.fs.tum.de](mailto:asta-umweltreferat.fs.tum.de)



EXAMPLE 2

## **Green Office**

The Green Office at TUM Campus Straubing is run by students for students and serves as a platform and common denominator for students and university employees interested in sustainability. It improves and simplifies the communication of existing initiatives, coordinates projects, connects different parties involved, and creates new impetus.

[go.tum.de/010359](https://go.tum.de/010359)



EXAMPLE 3

## **Engineers Without Borders**

At Engineers Without Borders, students work with alumni and other experienced engineers to develop sustainable concepts for better access to electricity and water worldwide. The current main focus is on renewable energies with particular emphasis on photovoltaic applications. Currently, the projects take place in Africa. In addition to the technical design of the systems, emphasis is placed on developing a coherent, effective and viable concept for the sustainability of the implemented projects.





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FOUR EXPERTS, ONE TOPIC



We can  
make  
the world  
a better  
place.



THE ROUND TABLE ON SUSTAINABILITY

**E**lectro-mobility, climate targets and Fridays for Future: in recent years, the social discussion around sustainability has gained momentum. As a technical university, TUM bears particular responsibility here and is aware that it serves as a role model: sustainability must play a central role in both research and teaching. But which parameters should be adjusted first on the way to a better future? **How can society be persuaded to adopt a more sustainable lifestyle? And what role do universities and scientific institutions play here?** In an attempt to capture the various aspects of sustainability, we have brought together four experts, who each contribute in their own unique way to more sustainability in the world – in research, as a social mediator, as an entrepreneur and in higher education policy. They explain what sustainability means to them personally and discuss what needs to change in society in order for our children to experience the world in all its diversity and richness, and to have a bright future.

*TUM Alumna Dr. María José Barragán-Paladines travelled from Ecuador – more precisely from the Galapagos Islands, located well out in the Pacific Ocean. For two years, the marine biologist and human geographer has been the scientific director of the Charles Darwin Foundation for the Galapagos Islands there, an international non-profit organisation that provides scientific insights and research-based knowledge to support the conservation of the unique flora and fauna of the Galapagos Islands and the sustainable practices of human communities. The archipelago is a UNESCO World Heritage Site and is governed under strict protection.*

*At the meeting point in front of the TUM Main Building in the centre of Munich, she has already met Tabea Riemensperger. The student enrolled in the Master's degree Science and Technology Studies is actively involved in the Environmental Department of the TUM Student Council (AStA). When we arrive, the two are already immersed in a conversation.*

**How nice. You have already introduced each other.**

*María José Barragán-Paladines:* We just talked about how much I enjoy coming back to Munich, it's my second home.

*Tabea Riemensperger:* How come?

*Barragán-Paladines:* Munich is my husband's hometown and my son was born here as well. I came to Munich in 2006 to study at TUM. After that I went to Canada for my PhD. My path brought me back to Germany, this time to Bremen, where I worked at the Leibniz Centre for Tropical Marine Research.

*With a swift stride Professor Brück approaches the group. The biochemist is an internationally acclaimed expert in the field of Synthetic Biotechnology with a particular focus on Algae Technology. At TUM's Algae Cultivation Centre in Ottobrunn, the only one of its kind anywhere in the world, he is investigating the potential applications of salt-water algae, for example to produce biofuel and carbon fibres. In doing so, he is relying on a particularly sustainable research model, which recycles all materials from the process cycle in a way that preserves their value. His research is groundbreaking and therefore, his sched-*

**DR. MARÍA JOSÉ  
BARRAGÁN-PALADINES**

After finishing her Bachelor's degree in Biology at the Pontifical Catholic University in Ecuador, María José Barragán-Paladines worked on marine conservation projects for almost ten years in local non-governmental organisations. In the process, she became aware of the importance of sustainable management and studied Sustainable Resource Management at TUM from 2006 to 2008. For her PhD in the field of Human Geography she went to Memorial University of Newfoundland in Canada. Subsequently, as a postdoc, she contributed her knowledge to the working group Development and Knowledge Sociology at the Leibniz Centre for Tropical Marine Research in Bremen. During her many years of scientific work María José Barragán-Paladines developed her own research agenda. Her publications and research on governance, policies and practices of global small-scale fisheries are among the most important scientific references in this field. Since 2018 she has been the Science Director of the Charles Darwin Foundation for the Galapagos Islands, and since April 1<sup>st</sup>, 2020 she has also been appointed as the Interim CEO of the Charles Darwin Foundation.

*We don't need selfishness  
if we want to build a good  
future for ourselves.*

*ule is packed. Nonetheless, he freed up this Monday morning to talk to us about sustainability.*

**Good morning Professor Brück. Thank you for being able to join our conversation.**

*Thomas Brück:* I am pleased to be here, too. The topic is so important.

*Already on the way to the conference room our Round Table guests have a lively discussion.*

*Brück:* The other day an interesting documentary was on. It was about the problem of plastic waste on the Galapagos Islands. The ocean currents are washing tons of plastic ashore, which then ends up in the stomachs of animals. There are volunteers who now collect the rub-

bish, but there is no way to recycle it locally. It has to be flown to the mainland.

*Barragán-Paladines:* That's right. And the ironic thing is that it is not primarily our rubbish. In the Galapagos Islands, the kids are already being educated in how to use refillable bottles, for example. Certain plastic bags and straws are banned in Galapagos. The plastic waste that washes up on our beaches originally comes from the South Pacific area and Asia, brought by marine currents. It's a global problem and in order to address it properly, we need to change the attitude and mindset of all people in the world.

*Brück:* Think globally and act locally.

*Riemensperger:* But it's not enough for the president of a country to stand up and say: "Please don't use plastic bags anymore." The goal must be a society in which



**DR. ANDREAS SICHERT**

Andreas Sichert studied Physics at TUM and later earned his doctorate under Professor J. Leo van Hemmen, now TUM Emeritus of Excellence, from the Physics Department. It was here – as part of the research conducted at the Chair of Energy Systems – that the story of his company Orcan Energy, which he established with two partners after completing his doctorate, started. Today, the company is a leading global provider of energy solutions based on ORC (Organic Rankine Cycle). In this process, expansion devices generate electricity. They are, however, not powered by steam, but by organic fluids. These have a significantly lower evaporation temperature and are capable of operating efficiently even at lower temperatures. As a result, otherwise unused waste heat in the low-temperature range can also contribute to the generation of power. Customers of Orcan Energy thus benefit from zero-carbon electricity at the lowest power generation costs in the world. By now, Orcan Energy has installed 200 systems worldwide, which together have saved around 20,000 tons of carbon dioxide. The electrical power generated could supply a small German town. With the help of TUM, the company founders have also managed to protect important inventions. The company's patent portfolio now comprises more than 100 patents, eight of which date back to the time when the founders did research at TUM. The entrepreneurs have already received numerous awards: together with the TUM Chair of Energy Systems and the TUM Patents and Licenses team, they recently received the Technologietransferpreis from the German Physical Society.



everyone feels obliged to help. Perhaps this is more about emotions than about rational reasoning.

*Barragán-Paladines:* Yes, right. Governments shouldn't just impose conditions. At the end of the day, the rules are violated if they go too far against personal habits and convictions.

*Riemensperger:* That's why we have to change people's convictions.

*Barragán-Paladines:* In Galapagos, our strategy is focused on children. The children in turn, convince their parents, and the parents convince the grandparents. That way, we create a change – not within a year and not in five years, but with the attitude change in generations. The problem, however, is that we don't have time to wait and see. We must act now.

*Riemensperger:* Changing people's attitudes will simply take time. If it is pushed through too quickly, opinions become entrenched. It has to happen organically.

*Dr. Andreas Sichert, the fourth member of the round table discussion has arrived. He is the co-founder of Orcan Energy. The ORC modules developed in his company, convert waste heat from industry or traffic into usable energy, which has already earned him numerous awards – most recently the Technologietransferpreis [Technology Transfer Award] of the German Physical Society. He has intently followed the discussion that is already under way.*

*Andreas Sichert:* I disagree. The government likes to say that we need a little more time to explore the problems and test the solutions. Allegedly we wouldn't know enough about them yet. This is a way of postponing the problem to the next legislative term and of dodging the responsibility to act and having to thus take painful decisions. But we already know a lot: we know, for example, that wind energy works, we know that photovoltaic works. All we have to do is implement these technical solutions, roll them out and be quite pragmatic about it.

*Brück:* I agree. Everything else is playing for time. We have to decide which is the best solution available today. And then move forward with that. Of course, we should continue with research and keep adapting the technologies to the new findings.

**Ms Riemensperger, as a TUM student you are the youngest in the group today. How do you assess the situation? Isn't the change already taking place – especially in your generation, considering, for example, the Fridays for Future movement?**

*Even though technology is partly responsible for the problems we are facing today, it is also technology that will help us.*

*Riemensperger:* Of course, something is obviously changing right now: about two years ago, first one person took to the streets to demonstrate, then there were ten, and today there are millions of young people all around the world. Perhaps now is the right time for this topic. At the same time, however, I have the feeling that politicians are letting us down because they are not reacting. My fellow students and I, we want to reform the energy policy, but at the same time the government is making it extremely difficult to build wind farms. This doesn't add up. The gulf between the young students who are out there in the streets and – sorry, but I have to say it like this – these old, quixotic politicians up there is huge. They have lost touch with our generation.

*Brück:* You must not forget that politics is dependent on other powers, too. There are lobbyists, there are political advisors, most of whom do not come from academia and are therefore not that skilled at suggesting the appropriate solutions. Take for example the discussion on the carbon tax increase. The Potsdam Institute for Climate Impact Research recommended to the Federal Government to set costs at 180 euros per tonne of CO<sub>2</sub>. And where did we end up?

*Riemensperger:* At 25 euros per ton of CO<sub>2</sub>.



*Brück:* Exactly. And that was after hard negotiations. Initially, the government wanted to start with just 10 euros per tonne of CO<sub>2</sub>. Because that's a number that is feasible for the industry. Now we have reached the middle ground, which unfortunately doesn't work because the carbon levy cannot work as intended.

**Why?**

*Brück:* The costs are too low to influence production. They are simply allocated to the consumer prices.

**TABEA RIEMENSBERGER**

Tabea Riemensperger started to get intensively involved with renewable energies, climate control and heating systems during her studies of Mechanical Engineering in Karlsruhe. At that time she was already wondering whether technological innovations as such could provide a general answer to our climate issues. This is why she decided to switch to TUM, where she has now been attending the Science and Technology Studies Master's programme since 2018. It primarily deals with the conditions of technological innovations and their effects on society. She is also a working student in the International Energy Control Department of a large automotive group and involved in the Environmental Department of the Student Council. One of her responsibilities here is the organisation of the lecture series 'Environment', which will be taking place for the 70th time next summer semester. At this event experts from various fields come to TUM and provide insights into fields of work relevant to current issues. Alumni are of course more than welcome to join (see p. 46).



*Changing people's attitudes will simply take time. It has to happen organically.*



As a scientist, I say that things will only change when the carbon levy is 100 euros per tonne. At this price, the industry has to immediately bring all the innovations it has in store to the market and break new ground. Then the change will get underway. But anyone who wants to implement that from one day to the next would massively endanger political stability.

*Riemensperger:* But that is exactly what discourages the younger generation. Why should they carry on if the politicians apparently do not acknowledge their demands and concerns?

*Brück:* You are changing society above all through what you do in practical terms. You are enrolled at an excellent academic institution here. I always tell my students: be aware of the power you have. With the knowledge you acquire at TUM, you can start your own business, become an entrepreneur, really make a difference.

*Riemensperger:* It would be easier if we had the support of politicians.

*Brück:* Yes, business start-ups and the financing of good ideas need to get more support in Germany. We don't have an investment culture in Germany. Young entrepreneurs are often dependent on the help of big companies that buy in, but then you need a lot of persuasion to keep the idea of your technology in its original form.

*Sichert:* That is true. Good capital from institutional investors is rare in Germany. There are some in Berlin, few in Munich, but most of them basically only invest in IT and the e-commerce industry.

*Brück:* Because these are the industries with the lowest risks.

*Sichert:* But what we need on the way to more sustainability is not just based on digital solutions. We need hardware and the right technology, in order for things to change. Other countries like the U.S. or China offer these companies ten times more funding. There, things can be approached quite differently – and much more effectively.

*Brück:* And faster.

*Sichert:* Exactly. You only have to look at energy production in this country with its production capacity of around 200 gigawatts. That's established and proven. If you want to challenge this system with new technology, you can't do it with technology that has a potential of only a few kilowatts, nor with well-intended technical demonstrations on a small scale. One must therefore use new technologies on a large scale and in large volumes, otherwise it will never be possible, for example, to prevail over coal-fired and nuclear power and to make a relevant contribution.

*Barragán-Paladines:* Talking about sustainability on our planet, we should however not only think on how technology, innovation and entrepreneurship is done in Germany and in other technologically strong countries. There are millions of people on earth who have to cook and wash with contaminated water and who don't have any waste disposal system. In the Galapagos Islands, health care is insufficient, so people have to fly to the mainland if they want adequate treatment. For these societies, sustainability means something completely different than for European countries like, Germany or in the USA.

**Isn't this an important point for the education of our students? That we have to teach internationally and interdisciplinarily so that the future generation can keep an even better eye on the big picture?**

*Brück:* I do think so. Innovative solutions emerge precisely at the interfaces between the disciplines.

*Barragán-Paladines:* We need new generations of experts, working within complex societies and getting used to do research with interdisciplinary approaches, and working together in international groups to examine global problems from varied standpoints.

*Riemensperger:* And in addition, communicating research results should be thoroughly practiced from the



very beginning at university. I did a Bachelor's degree in Mechanical Engineering. But as students, engineers usually don't learn how to let other target groups know about their work and their products. And unfortunately we all don't learn how to consume information from the media critically and attentively. Yet, this is essential for us to be able to distinguish between false and correct facts and make well-founded decisions.

*Sichert:* For me, this is one of the central tasks universities have. The scientists at TUM can supply facts for emotional discussions. We live in an age offering an outright flood of information in the media. Here, it would be good to have a trustworthy institution like TUM providing facts, on the basis of which consumers can make better decisions. An important job!

*Riemensperger:* I am skeptical. If someone protests a wind turbine in their home village, it is mainly for emotional reasons and less for rational ones. And scientific facts are not the solution to emotional problems. Maybe scientists and politicians should rather accept that there is this strong emotional side – instead of trying to argue it out of existence.

*Barragán-Paladines:* Whether I buy an organic product or not, whether I get a new car or not, all this is based on our personal values. This should be assumed in that way. For decades, this aspect has not been paid enough attention.

### **So what was that like for you?**

#### **What inspired you to get into the subject of sustainability?**

*Barragán-Paladines:* I grew up in a very large family and the issue of preserving resources was omnipresent there, for example in the question of how much food you really need to feed the family. In my early childhood we had to be very frugal – also in terms of energy consumption and especially water.

*Sichert:* It was quite similar at my home. I am from the countryside. In our house, food was not thrown away, clothes were put on several times when they didn't have to be washed yet, or mended when they were damaged. Heating was turned down in the rooms we didn't predominantly use. Just these simple things. This behaviour was even reinforced as we lived with the grandparents who had known a time when not everything was always available. We called this: thriftiness. In my case an enthusiasm for technology came on top of that.

*Innovative products  
not only give us  
the chance to be  
a leader in a  
technological field,  
they also give us  
the ability to make  
the world  
a better place.*

### **How did that impact on your life?**

*Sichert:* I used to read a lot of science fiction. For example, about exploring new planets. The novels painted a very positive picture of technology and the future. How can the protagonists improve the world and life on it with the help of technology? This attitude towards technology as something that positively changes living conditions led to my later decision to study Physics at TUM and eventually to set up a company.

*Brück:* I think this is an important point. While technology is partly responsible for the problems we are dealing with today, such as climate change and air pollution, it is also technology that will help us solve these problems. What we need is good research and a rethinking in society.

### **When conducting your research and work, to what extent do you pay attention to sustainability and careful use of resources?**

*Brück:* In our research projects we do this quite intensively. We are trying to achieve a closed cycle in the process from raw material to product without residual material flows. An example: in one of our projects, we have an algae containing oil. We extract this oil and convert it into alternative fuel. For this process, however, we need hydrogen. So we use the residual biomass of the algae, which is the waste from the extraction of the oil, in a modified biogas process to produce the hydrogen we need to make the fuel. This way we were able to use all the parts of the algae and we even used the biogas plant's waste to fertilise the fields. No loss.



#### **PROF. DR. THOMAS BRÜCK**

Thomas Brück studierte Chemie, Biochemie und Molekularmedizin an der Keele Universität in England. Seine Postdoc-Laufbahn absolvierte er im Feld der Naturstoffbiochemie am "Centre of Excellence for Biomedical and Marine Biotechnology" der Florida Atlantic University in den Vereinigten Staaten. Danach wechselte er in die Industrie und hatte ab 2006 vielseitige Managementaufgaben im Bereich der Biotechnologie der Süd-Chemie AG. Seit 2011 ist er berufener Professor an der TUM und befasst sich mit den Themen der Synthetischen Biotechnologie und Nachhaltigkeit. Ein Spezialgebiet seines Lehrstuhls ist das Design nachhaltiger biotechnologischer Prozesse zur Konversion von Restbiomasse in Plattform- und Spezialchemikalien. Kernkompetenzen sind mikrobielle Kultivierung, Design artifizierender metabolischer Stoffwechselwege, Synthetische- und System Biologie als auch assoziierte Bioprozessentwicklung unter Nutzung von *E. coli*, Hefe und Mikroalgen als Zellplattformen.

Thomas Brück betreibt das global einzigartige Algentechnikum der TUM in Ottobrunn, welches erstmalig Algenprozessentwicklung mit Klimasimulation erlaubt. Hier sollen effiziente Verfahren zur Produktion von Biokerosin und chemischen Wertstoffen aus Algen erforscht werden. 2019 wurde Thomas Brück als erster Preisträger vom Präsidenten der TUM mit dem TUM Sustainability Award ausgezeichnet. In einem Vortrag exklusiv für Alumni informiert Thomas Brück im Sommersemester über seine Forschung (S. 46).



*Sichert:* It's a very fundamental approach in our company, too. We take waste heat that is not needed anywhere else and would normally just disappear, and turn it into electricity. Think, for example, of an engine propelling a ship forward. Only 40 percent of the fuel's energy can be used for propulsion. The other 60 percent is waste heat and is not actually used. With our technology we can turn this waste heat back into energy that is used, for example, for the electricity on a ship. This reduces the fuel required by 7 to 10, sometimes even 12 percent. That's enormous. Just think how many ships are out on oceans and rivers transporting goods from A to B.

*Barragán-Paladines:* We currently are building a new marine research centre at the Charles Darwin Research Station, in Galapagos. The original building was from the sixties. We have torn it down and are now using as much of the old material as possible to build the new building. This makes us a role model for the people on site and shows how to build sustainably, even if you don't have a big budget, like us. As a non-profit organisation, we are 100 percent dependent on donations and have to economise with our funds.

*Riemensperger:* To me, it is important to be more aware of the world and environment around us and to get out of the spiral of continuous increase in resources. The sociologist Hartmut Rosa says in his Resonance Theory that people desire to interact with the world in a way that allows the world to respond to them and resonate with them. Sometimes a change of perspective from our side is all that's needed: if there is a speed limit on motorways, it doesn't mean that I am being deprived of my freedom. Instead it means that I am given more time to experience my surroundings. Maybe I don't have to jet around the world to have a nice holiday. Maybe I can just stay home because it's beautiful here, too, and I can directly experience what nature does around me.

**Right at the beginning of our conversation we discussed how important it is to change people's attitudes and to take all of society with us on the road to a sustainable world.**

**What do you think has to change, what would you like to see?**

*Barragán-Paladines:* I would like to see a less selfish world. We don't need selfishness if we want to build a good future for ourselves. We should convince people that a sustainable life is not only valuable, but it also is fun.

*Brück:* Yes, that's right. Many people are afraid that a more sustainable lifestyle will at the same time result in major restrictions of their personal freedom. But that's not the case. There are many good solutions in which ecological and economic advantages go hand in hand. In order to convey this, we need fast and good communication between science, politics and society. For me as a scientist, this means on the one hand that I need to interact more with the political landscape, and on the other that I should communicate my research results in such a way that people understand them.

*Sichert:* We must not lose people's approval when we talk about sustainability. It is important that we recognise the opportunities that we already have available right now, to not just look at risks and try to protect our old assets. Can we create new values? Where are the opportunities in the upheaval and how can we use them in business terms? It has to go hand in hand: a better life and a more sustainable life. That would be a model that us Germans could export.

**What could this look like?**

*Brück:* We have to make agriculture more sustainable in order to solve the food problem. We use so much energy and resources in food production – especially in our highly developed society. The Haber-Bosch Process, a large-scale industrial process for the synthesis of ammonia, which is used in large quantities in fertilizers, is one of the most energy-consuming processes around.



And unfortunately, at the moment we have no alternative. We have to find one – and perhaps algae are the solution here too, fertilizing through the nitrogen they filter from the air.

*Sichert:* There are many other examples, but I am of course best acquainted with the products from our company. We can convert waste heat that is generated, for example, during work in steelworks or in the cement industry, which would normally dissipate, into electricity. Do you know why I think this is so great? Because it enables us to offer electricity at a lower price than anyone else on the market. And completely free of CO<sub>2</sub>. So the solution is better both in ecological and economic terms – and it can be done today!

*Barragán-Paladines:* Everyone can do something in their own environment, at the local level we have already mentioned earlier – small steps that change the world, for example an electric car instead of diesel, roof gardens to lower the indoor temperature, solar cells on the roof.

*Riemensperger:* And this is a benefit for all of us, it doesn't slow down our society, it moves us forward.


*Brück:* In Germany we live off the transfer of technology. We invent high-tech solutions which we then sell to the world. And with these innovative products, we not only have the chance to be leaders in technology, we also have the ability to make the world a better place.

*Sichert:* We are undoubtedly facing perturbation. The world is changing, and it will change the way we live. We'll either be in the back seat or the driver's seat here.

**Many thanks to all of you.**

**We are going to switch off recording now.**

*The microphone is off, the discussion at the table continues. Too important the subject, too valuable the exchange. The commitment of our guests goes far beyond their professional interests. All four of them make their personal contributions in science, business and society with conviction to make our world a little more sustainable. Each of them has taken new ideas with them today. We will see what the future brings.*



*The world  
is changing,  
and it will  
change the  
way we live.  
We're either  
in the back seat  
or the driver's  
seat here.*

A photograph of a man sitting on a rooftop garden. He is wearing a light blue button-down shirt and dark trousers. He is surrounded by green plants and purple flowers. In the background, there are solar panels and a building with a red roof. The sky is clear and blue.

“WE HAVE NO  
CHOICE OTHER  
THAN TO BUILD  
SUSTAINABLY.”

PO  
SC

**Prof. Dr. Werner Lang (Diploma Architecture 1988, Doctorate 2000)** on the rooftop of Oskar von Miller Forum. The holder of the TUM Chair of Energy Efficient and Sustainable Design and Building in Munich is committed to building houses that leave a positive ecological footprint.

The construction industry is responsible for around 40 percent of carbon emissions and energy consumption and for well over half of the waste volume. Energy consumption and, above all, material consumption are huge in the building industry. “We have to handle these resources much more efficiently”, says Werner Lang. He believes that one of the most important levers for reducing environmental pollution is energy efficiency:

buildings should be built in a way that requires as little fossil fuels as possible. “However, there are other aspects that also play a decisive role when it comes to sustainability. For example, how certain materials or construction processes affect the environment. Ecological building is all about ensuring that we threaten the ecological balance as little as possible”, says Werner Lang. In addition to his work at TUM, he and two other TUM Alumni, Florian Hugger and Thomas Rampp (both Diploma Architecture 1999), have been running an architectural office for 14 years, which primarily focusses on sustainable building.

More at [go.tum.de/006822](https://go.tum.de/006822)



# POSSIBLE SOLUTIONS

**TUM  
Alumni  
striving  
for  
more  
sustainability**

**Twelve  
visionaries  
and  
what  
they are  
up to.**



## MARIANNE PFAFFINGER SUPPORTS CITIES IN PROTECTING THE CLIMATE

Even as a child, **Marianne Pfaffinger (Master Sustainable Resource Management 2009)** and her parents already collected rubbish on their walks. "My family taught me to be in awe of nature – and that you don't just have to accept negative things", she says. Having finished her studies, she frequently worked as a freelance sustainability consultant, which often also involved her alma mater. During this time she developed a guide for the Federal Ministry of Food and Agriculture and the Climate Protection Booklet by the City of Munich. Today, Marianne Pfaffinger works for a major agency for sustainable development in Munich and supports cities in working out the best solutions for climate protection. Not only there, but also as part of her volunteer work after hours, she creates dialogues between a wide range of target groups. She is on the board of Münchner Klimaherbst, holds seminars on the biblical perspective of global justice at the Micha Deutschland association, or hosts, for example, an international sustainability panel for the Christlicher Verein Junger Menschen München.

[www.150.alumni.tum.de/en/marianne-pfaffinger-en](http://www.150.alumni.tum.de/en/marianne-pfaffinger-en)

**Dr. Lutz Spandau studied Landscape Architecture and Ecology at TUM's Campus Weihenstephan.** In 1988 he completed his doctorate here. In his role as Academic Councillor at TUM's Chair of Vegetation Ecology, he worked on numerous national and international projects in the field of ecosystem research together with TUM Professor emeritus Dr. Wolfgang Haber.

Since 1998 Lutz Spandau has been a board member of Allianz Umweltstiftung. For the landscape ecologist, who also holds a doctorate, this office is not just a profession but his true calling. Keeping the big picture, bringing together topics, people, opinions and making decisions – Lutz Spandau really enjoys doing all these things. Since then, he has brought together hundreds of experts from various disciplines and often brought other foundations on board to ensure the success of future-oriented projects. "Only by working in close cooperation with the right partners will we be able to provide answers to the complex and pressing environmental issues we are facing", he emphasises.

[www.150.alumni.tum.de/en/lutz-spandau-en](http://www.150.alumni.tum.de/en/lutz-spandau-en)



## RONJA WOLF WANTS SYSTEMIC CHANGE

Driven by a deep curiosity for biological systems and an interest in environmental problems, **Ronja Wolf (Master Sustainable Resource Management 2016)** came to TUM to learn more.

In her job she can put her expertise to good use. For four years now she has been working in the Munich office of SYSTEMIQ. The think tank not only develops and evaluates concepts and strategies for sustainable economic systems, but also implements them: "The world urgently needs action to tackle the climate crisis", says Ronja Wolf. In Indonesia, Vietnam and the Philippines, she helped to stop the flow of plastic waste into the oceans, while at the same time promoting the economic development of these countries. Ronja Wolf is currently working with full commitment on establishing the circular economy as a topic relevant for the future in politics and industry. On behalf of the Federal Ministry of Education and Research, she is helping to develop the strategy that will pave the way for German companies to enter a circular economy. Meet Ronja Wolf at the TUM Mentoring Network Meeting on the 17<sup>th</sup> of June (p. 59).

## LUTZ SPANDAU PROMOTES ENVIRONMENTAL PROJECTS



## DAYYAN SHAYANI ASSESSES THE UNITED NATIONS' SUSTAINABILITY GOALS

**Dayan Shayani (Master Communications Engineering 2007)** speaks six languages and has worked on four continents. As a specialist in information technology and statistics he worked for companies in Israel and Thailand. In 2015 he left the private sector behind and has since been working for the United Nations.

As part of his work for the Economic and Social Commission for Asia and the Pacific (ESCAP) based in Bangkok, he conducts trend analyses on goals of sustainable development. With goals in 17 domains, ranging from poverty reduction and climate protection to the building of peaceful societies, the United Nations works with partners from all over the world to ensure a good future for everyone, based on a sound economic, social and environmental founda-



tion. Dayyan Shayani and his team have developed innovative systems to help countries track their progress towards a sustainable future. "Our analysis tools allow governments to monitor and evaluate the impact of their policies", says Dayyan Shayani. "In this way, we promote evidence-based policy-making and thus contribute to the global agenda".







## LILIAN BUSSE PROTECTS WATER FROM POLLUTION



**Dr. Lilian Busse (Diploma Biology 1993)** discovered the Limnological Research Station in Iffeldorf by the Osterseen while studying at TUM. Here, for over 30 years, students have been trained in scientific diving and internationally renowned research projects have been carried out. In the nineties Lilian Busse helped to expand the station, did internships and also wrote her diploma thesis here.

“The Osterseen have had a hold of me ever since. I still visit them regularly”, Lilian Busse recounts. Also, the topic of water and water protection has been a constant in the biologist’s life since her time at TUM. From 2002 to 2006 she worked as a research assistant at the Scripps Institution of Oceanography in San Diego, one of the world’s oldest, largest and most important centres for marine research. Afterwards she got an interesting offer from the Californian Environmental Protection Agency. Again, the focus of her tasks was on water protection. Since 2015 Lilian Busse has been heading the Department of Healthcare Oriented Environmental and Ecosystem Protection at the German Environment Agency in Dessau.

[www.150.alumni.tum.de/en/lilian-busse-en](http://www.150.alumni.tum.de/en/lilian-busse-en)

Since her university studies, **Franziska Weißörtel (Master Environmental Planning and Ecological Engineering 2019)** regularly went to Cameroon and India to work in environmental aid projects. One of them is called 'Toranam', which translates into 'trees of life' in Hindi, one of India's official languages.

In the spirit of sustainable development through agroforestry, environmental education and green energy, Franziska Weißörtel's aim is to provide practical assistance to participating small-scale farmers whose livelihoods are threatened by climate and socio-economic processes. For this purpose, she set up a model farm for organic agroforestry with a fellow student and an Indian NGO in the southern province of Andhra Pradesh. In conjunction with an affiliated educational and economic centre, the idea is for the farms to become more independent within two years and to be able to obtain fair prices for their organically produced products. In 2018 she received the 'Google Impact Challenge Germany Award' for her 'Toranam' project. Since February 2020, Franziska Weißörtel has been working at Naturland in Munich as a project coordinator.

[www.150.alumni.tum.de/en/franziska-weissoertel-en](http://www.150.alumni.tum.de/en/franziska-weissoertel-en)



## FRANZISKA WEISSÖRTEL IS INVOLVED IN SUSTAINABILITY PROJECTS IN AFRICA AND INDIA

## RAFAEL KIRSCHNER PUTS A NEW SPIN ON COMMUNAL WASHING

**Dr. Rafael Kirschner (Diploma Mechanical Engineering 2006, Doctorate 2011)** is totally committed to innovation. With TUM's Professor Udo Lindemann he had the right teacher for the topic of incremental innovation processes. In 2011, Rafael Kirschner obtained his doctorate with him. For five years he worked for a Bosch Group subsidiary and consulted them on the digital future of the 'Internet of Things'. Thanks to his strategies, refrigerators, ovens, dishwashers, and washing machines became smarter – and thus more sustainable.

In 2016, Rafael Kirschner launched the Bosch Group's first innovation spin-off and made it the market leader for digital accounting systems in laundry rooms. WeWash connects communal laundry rooms with their users via a mobile phone app. A quick look at the phone tells you if there is a machine available or if your laundry is already done. And payment is cashless via direct debit or credit card. "Our goal is to make sharing a washing machine so attractive that people are happy to make the switch", says Rafael Kirschner. "With our digital solution, everybody can reduce their carbon footprint with this everyday activity."





**Dr. Lars Hoffmann's (Diploma Electrical Engineering and Information Technology 2003, Doctorate 2008)**

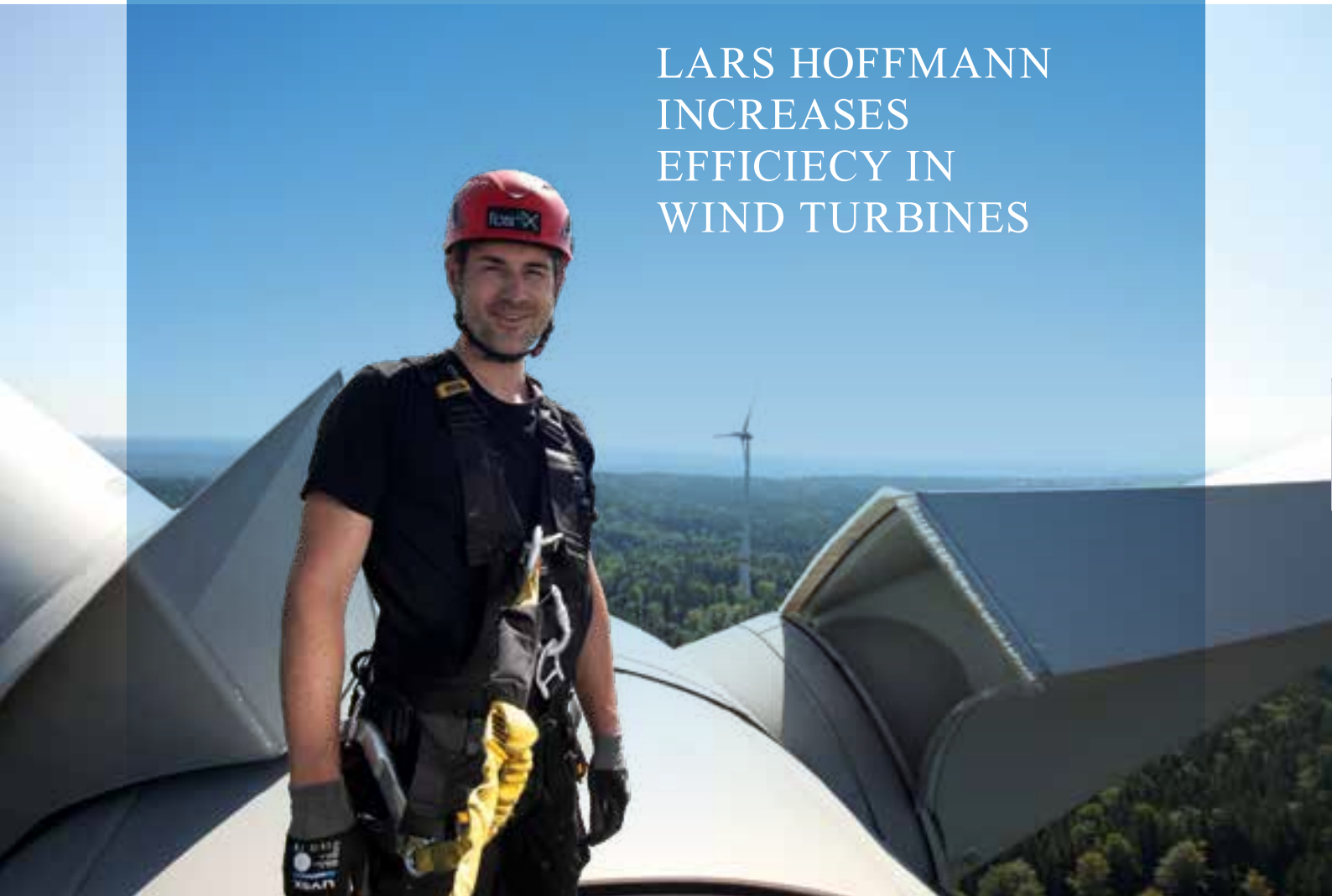
has a vision – worldwide availability of clean energy. With the founding of his company fos4x he is pursuing this goal. Here, products that make wind energy more efficient are being developed. The company's digital solutions show that growth does not necessarily have to be accompanied by the destruction of resources. With his products, he can reduce four tons of plastic in the rotor blades of a wind turbine and subsequently increase the yield of an already existing plant. "This year alone we are equipping more than a thousand wind turbines", he says. "This does actually add up."

Already during his doctorate at TUM's Chair of Measurement Systems and Sensor Technology, Lars Hoffmann focused on fibre optic measuring technology. Later he established the high-tech start-up fos4X together with the **TUM Alumni Dr. Mathias Müller (Diploma Electrical Engineering and Information Technology 2006, Doctorate 2009), Dr. Thorbjörn Buck (Diploma Physics 2007, Doctorate Electrical Engineering and Information Technology 2012) and Rolf Wojtech (Diploma Informatics 2006)** and has been its managing director ever since. With its special fibre optic measuring technology for monitoring lightweight structures, the TUM spin-off won the coveted TUM Presidential Entrepreneurship Award in 2013. Since 2014, Lars Hoffmann has been volunteering for his alma mater: as a mentor for the Manage&More programme of UnternehmerTUM and for TUM's start-up consultancy EXIST.


[www.150.alumni.tum.de/en/lars-hoffmann-en](http://www.150.alumni.tum.de/en/lars-hoffmann-en)




## LARS HOFFMANN INCREASES EFFICIENCY IN WIND TURBINES







## MARCUS LEHMANN USES OCEAN WAVES TO GENERATE POWER



Using ocean waves to generate something new – namely electricity and fresh water. This is the goal of CalWave Power Technologies, a company founded by **Dr. Marcus Lehmann (Diploma Mechanical Engineering 2013)**, whose CEO he also is. This ambitious start-up aims at commercialising a power plant that generates electricity from ocean waves. Compared to other forms of renewable energy, this form has the advantages that its resource is also available at nighttime and in winter, generally has a very consistent production profile, as well as a higher power density and thus requires less space than other forms of renewable power generation.

Already during his final project at Luitpold Gymnasium in Munich, a solar model car, Marcus Lehmann thought about the future of our planet and the dangers of climate change for the first time. He enrolled for a degree in Mechanical Engineering with a focus on renewable energies at TUM. At the same time he completed a postgraduate course in Technology Management at the renowned Center for Digital Technology and Management (CDTM). In a technical journal he came across an article about the innovative concept of a wave energy converter. As a Visiting Research Student of CDTM he suggested to participate in the project for his diploma thesis in Mechanical Engineering at TUM. The first patent was filed while he was still writing his diploma thesis. Since 2017 the company is independent and has headquarters in California and Germany and cooperates with UC Berkeley and other leading research institutes in the USA.



## THOMAS MAIER-ESCHENLOHR COUNTS ON NATURAL RAW MATERIALS

About 18 tons of packaging waste are being produced in Germany every year. These are piles of waste from plastic, glass and wood. “We do something about that”, says **Dr. Thomas Maier-Eschenlohr (Diploma Mechanical Engineering 2007, Doctorate 2013)**, who founded the start-up Landpack together with his wife Patricia in 2013. They developed environmentally friendly packaging, initially made from straw, which uses the frequently ignored natural raw material as a commodity. Their Landboxes from straw, and meanwhile also from hemp, secure and insulate the contents just like synthetic packaging, yet they are biodegradable.

“All products that were previously shipped in polystyrene boxes or with shaped elements made of plastic or corrugated cardboard can now be sent safely and in an environmentally friendly way in our Landboxes: from chilled foodstuffs, wine and medicines, to furniture, adhesives, machine parts, plants and electronics”, the founders list. Landpack obtains the material for the Landboxes from contract farmers in their immediate vicinity.

[www.150.alumni.tum.de/en/maier-eschenlohr-en](http://www.150.alumni.tum.de/en/maier-eschenlohr-en)





## ROMAN WOLKOW IS SAVING FOOD FROM BECOMING TRASH




Each year, more than a third of all food produced worldwide is being thrown away: a far-reaching problem with enormous financial, ethical and environmental costs. Restaurants and large companies in particular have few effective tools to avoid inefficiencies when it comes to placing orders and reducing waste. **Roman Wolkow (Bachelor Management and Technology 2014, Master 2017)** and his team have developed an Artificial Intelligence-based software that supports decision-makers in optimising the ordering and processing of fresh food and ingredients. The company Mitakus analytics thus supports food services with optimal sales forecasts and customised menu and meal recommendations to become more profitable and sustainable.

From 2010 to 2017, Roman Wolkow studied Management and Technology (TUM-BWL) at TUM. In order to finance his studies, he worked in the food service industry and experienced on various occasions how much food gets thrown away every day. In his opinion, one of the main reasons for that is simply poor planning. He decided to tackle this problem and to develop a solution to avoid wasting food. In March 2018, together with three colleagues, he launched the start-up Mitakus analytics, of which he has been the managing director ever since.




In light of inner-city driving bans and the growing awareness of the advantages of electrically powered machines in terms of costs, environmental protection and safety, the development of electrically powered excavators and cleaning machines is becoming increasingly important. The INVENOX team, led by **Dr. Martin Hammer (Doctorate Mechanical Engineering 2018)**, has developed an innovative and patented technology that connects battery cells. With this technology, compact, powerful and cost-effective battery storage systems can be produced. "Our battery modules can be built in various sizes and shapes", says Martin Hammer. In other words: while vehicles used to be built around existing batteries, the entrepreneurs can now produce customised energy storage systems for any application.

**Martin Hammer, Richard Eckl (Diploma Mechanical Engineering 2009, Doctorate 2016), Moritz Steffan (Diploma Mechanical Engineering 2011) and Georg Walder (Diploma Electrical and Computer Engineering 2011, Doctorate 2018)** met each other as doctorate students at TUM's Institute of Automotive Technology in 2011. At that time they did research on developing batteries for an electric car. Conventional batteries were too bulky, complex to produce and limited in capacity. For the four inventors it was all about making the technology as flexible, as powerful and as safe as possible. In March 2012, they managed to prove the basic feasibility of the technology in the lab. By mid-2012, the four had taken the courageous decision to implement their technological findings economically by starting their own company. With Martin Wipfler, who has a business administration background, as the fifth member, they established the start-up in 2014, which produces in-house developed energy storage systems for electrically powered applications. Meanwhile, INVENOX has around 50 employees and produces high-voltage and low-voltage batteries for renowned manufacturers of work machines on approximately 5,500 square meters in Garching near Munich.



## MARTIN HAMMER DEVELOPS STRONG AND FLEXIBLE BATTERIES

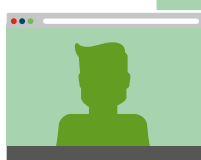


### There is more:

In the last Alumni Newsletter we looked for sustainability experts from our TUM Network.

Numerous alumni have contacted us and are willing to share their experiences in this field. Therefore, we would like to invite you to our TUM Community Group 'Sustainability Professionals'. Get to know other experts in the field and connect with each other. Simply go to **[www.community.tum.de](http://www.community.tum.de)**, log in (TUM ID/password) and search the section 'Groups' for 'Sustainability Professionals'.

**Just click 'join' and you're done!**





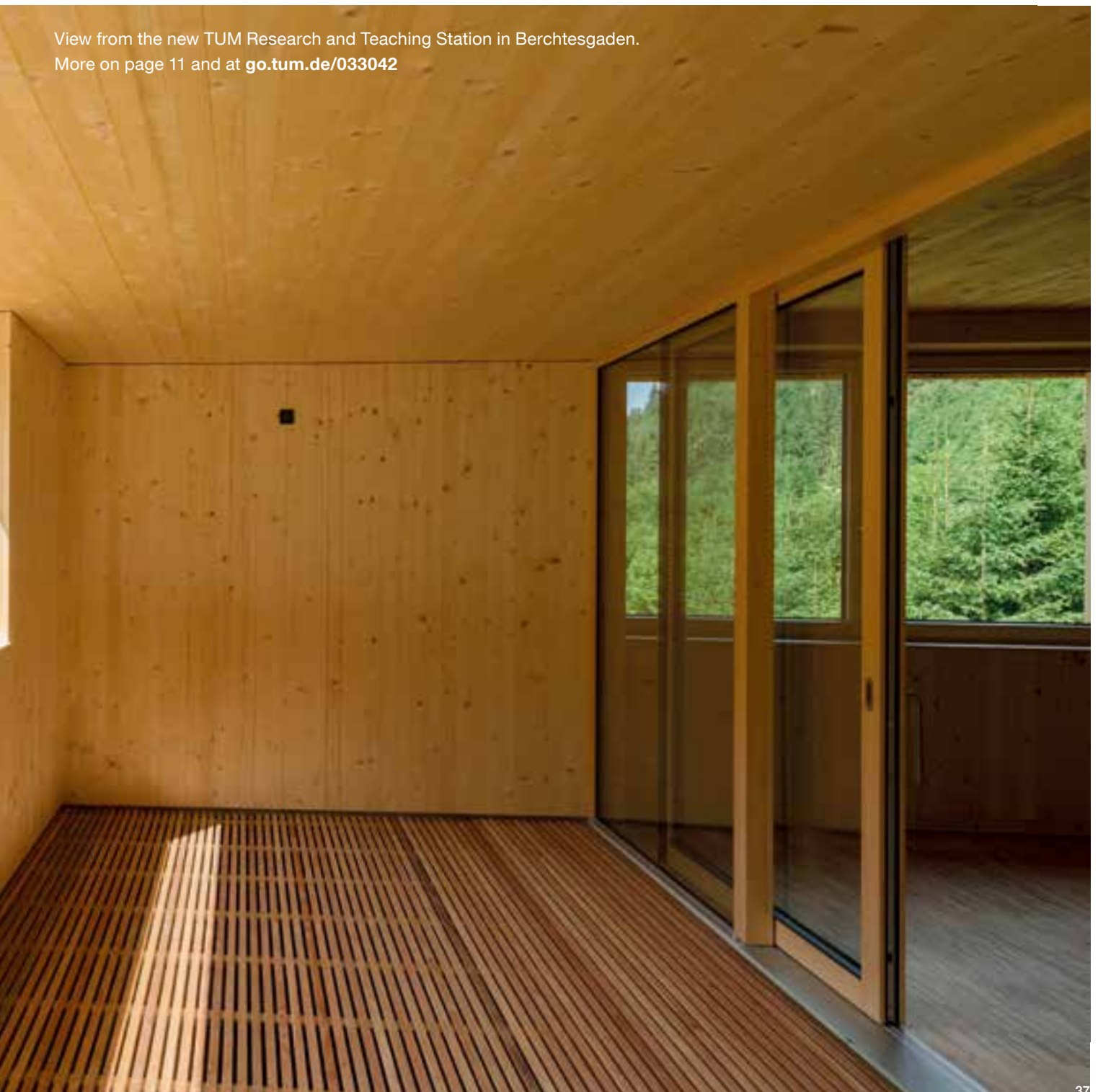
# KontakTUM Programme

For Alumni of the Technical University of Munich  
Spring/Summer 2020



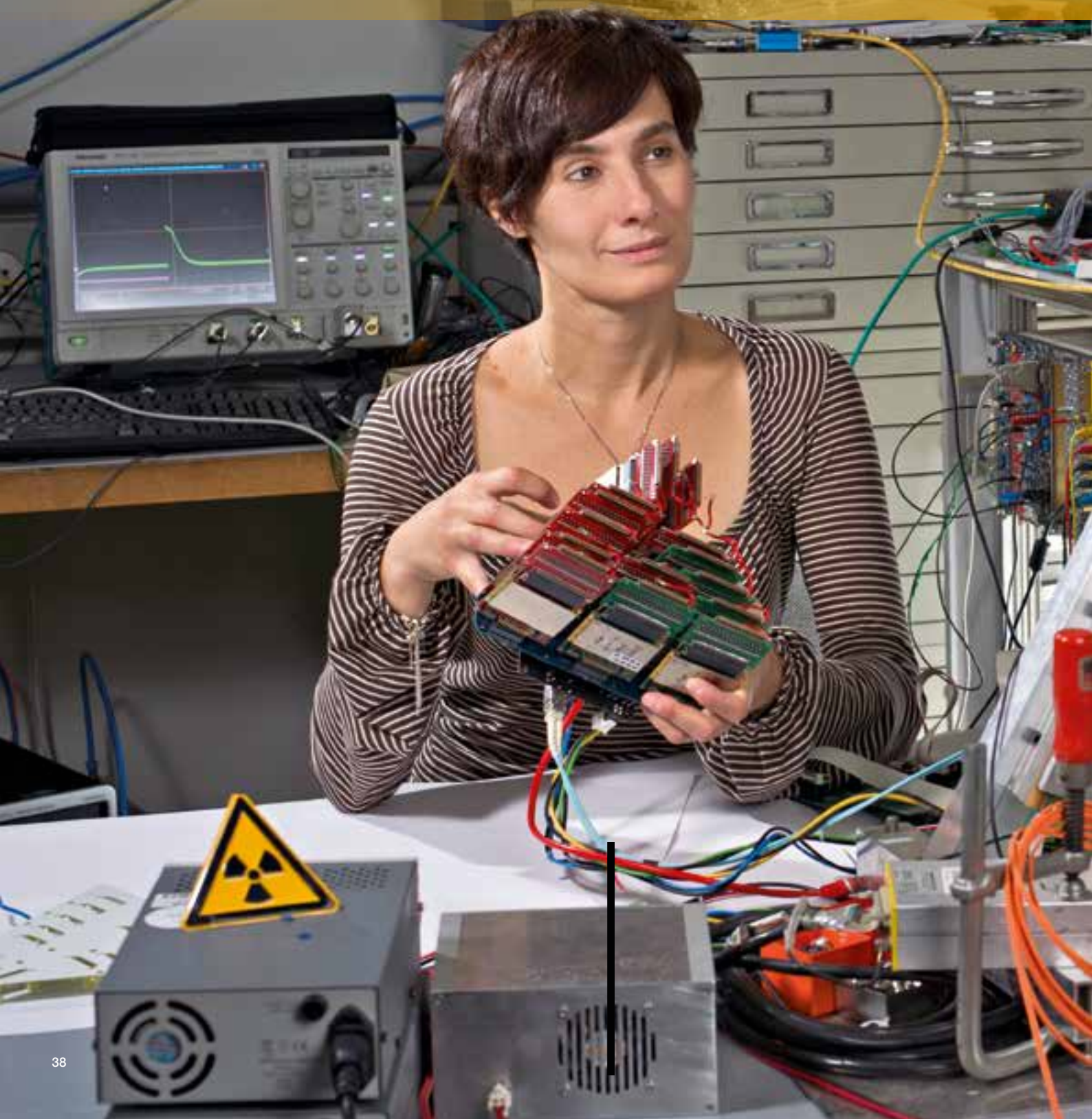
Due to the corona pandemic many events at TUM have to be postponed or cancelled at short notice. At the time of printing, we are not able to predict whether the events announced in the following can take place as planned. We therefore kindly ask you to check the respective websites beforehand to see if any changes to the events have been made.

View from the new TUM Research and Teaching Station in Berchtesgaden.  
More on page 11 and at [go.tum.de/033042](https://go.tum.de/033042)





# SCIENCE UP CLOSE





MAKING SCIENCE AND RESEARCH ACCESSIBLE AND COMPREHENSIBLE IS ONE OF THE GUIDING PRINCIPLES OF TUM. BECAUSE TUM IDENTIFIES AS A COMPANION OF SOCIAL CHANGE AND SHOWCASES HOW IT CONTRIBUTES TO OUR FUTURE IN TERMS OF SCIENCE AND TECHNOLOGY. THIS IS HOW IT PREPARES YOUNG PEOPLE FOR THE TASKS AHEAD.

The Science Matinees and the TUM@Freising Lecture Series are a platform for scientists to make complex content accessible to everyone and for researchers to talk about their everyday work. At 'Tech-Histories Alive', the TUM Emeriti of Excellence give insights into their top-level research. Whoever would like to experience research up close is invited to visit the Centre of Excellence for Renewable Resources in Straubing or the TUM Campus Garching at their Open Days.



## THE STRUCTURE OF THE UNIVERSE

Together with her team, TUM Alumna Prof. Dr. Laura Fabbietti (Doctorate Physics 2003) is investigating the interaction between nucleons and kaon, a family of subatomic particles, at different temperatures and densities. The experimental physicist is from Bergamo, Italy, and came to TUM for her doctorate under Prof. Dr. Reiner Krücken. Here, she has been heading a Helmholtz Young Investigator Group since 2007, a Junior Research Group of the Excellence Cluster 'UNIVERSE' since 2008, and a group in the Excellence Cluster 'ORIGINS – From the Origin of the Universe to the First Building Blocks of Life', which has been dealing with the universe's innermost structure and the origins of life since 2019.

*Experience Laura Fabbietti live at the Science Matinee (p. 40).*

## OPEN DAYS

## Discovering Science

Offering insights, making research easier to understand. Each Open Day at TUM is designed to achieve these goals. Until the end of October, three days offer the opportunity to visit different locations and find out more about topics such as nutrition and food in Weihenstephan or alternative energy crops, tractors running on rapeseed oil, and compostable bioplastics from the 3D printer in Straubing. On Mouse Day in October, the Heinz Maier-Leibnitz Centre in Garching will again be welcoming visitors to the Research Neutron Source and will also offer guided tours for children.



## SCIENCE MATINEE (IN GERMAN)

## What are our Neighbours up to?

The Science Matinee events on Sunday mornings in Garching have been running since 2013. Their aim is to introduce the general public to what the researchers on campus are doing every day. This summer semester, TUM Alumna Prof. Dr. Laura Fabbietti (Doctorate Physics 2003) and Prof. Dr. Daniel Cremers will present their work to a mixed, non-scientific audience.

**DATES**

*Prof. Dr. Daniel Cremers*

Sun. 12.07.2020, 11 am – 12.30 pm

*Prof. Dr. Laura Fabbietti*

Sun. 27.09.2020, 11 am – 12.30 pm

**PLACE**

TUM Campus Garching, IAS

**REGISTRATION/INFO**

[www.ias.tum.de/events/nachbarn](http://www.ias.tum.de/events/nachbarn)

## LECTURE SERIES TUM@FREISING (IN GERMAN)

## Science Explained For All

How can plants benefit from microorganisms in the soil? This question will be answered by researchers from the Science Centre Weihenstephan, who make science understandable for everyone in the framework of the TUM@Freising lecture series. A subsequent discussion after each lecture is explicitly wanted, because science thrives on the exchange of opinions. Not only for Freisingers or the alumni of the Science Centre Weihenstephan, but for everyone!

**DATES**

Tue. 16.06.2020, Thur. 24.09.2020,

Thur. 29.10.2020

6.30 pm – 9 pm

**ORT**

Freising, Lindenkeller, Veitsmüllerweg 2

**REGISTRATION/INFO**

[www.freising.wzw.tum.de](http://www.freising.wzw.tum.de)

## LECTURE SERIES (IN GERMAN)

## Public Traffic

Munich is growing, and so is the traffic. People's mobility behaviour is changing, and then there is also digitalisation. Understanding this change, but also helping to shape it – this is one of the challenges urban planning is facing in the years to come. The lecture series, organised by the Chair of Urban Development, takes a look at the conditions and consequences of the digital transformation for the development of urban mobility. Return to TUM and discuss with us!

**DATES**

Tue. 26.05.2020, Tue. 23.06.2020

6.30 pm – 9 pm

**PLACE**

TUM Campus Munich

Vorhoelzer Forum, Arcisstraße 21

**REGISTRATION/INFO**

[www.ar.tum.de/en/re/](http://www.ar.tum.de/en/re/)

[public-lecture-series-public-transport/](http://public-lecture-series-public-transport/)

#### KONARO – CENTRE OF EXCELLENCE FOR RENEWABLE RESOURCES

Sun. 19.07.2020, 11 am – 5 pm  
TUM Campus Straubing

#### RESEARCH NEUTRON SOURCE (FRM II)

Sat. 03.10.2020, all day  
TUM Campus Garching



#### SCIENCE CAMPUS GARCHING

Sat. 24.10.2020, 11 am – 5 pm  
TUM Campus Garching

#### REGISTRATION

Open event without registration,  
free of charge  
[https://www.tum.de/en/university-life/  
events/tag-der-offenen-tuer/](https://www.tum.de/en/university-life/events/tag-der-offenen-tuer/)

LECTURE (IN ENGLISH)

## Structural Engineering

“The challenges of the climate change crisis mean that collaborations, across the disciplines, are more important than ever”, says Structural Engineer Prof. Dr. Jane Wernick. In her lecture at Oskar von Miller Forum she will talk about the collaborative process of designing the built environment. She will describe some of the projects that she has worked on – such as London’s Millennium Wheel or the London Eye – and the conversations with architects and the rest of the design team, as well as clients, contractors and other stakeholders that led to the final designs. The lecture will be held in English.

#### DATE

Thur. 07.05.2020 6.30 pm – 8 pm

#### PLACE

Munich, Oskar von Miller Forum  
Oskar-von-Miller-Ring 25

#### REGISTRATION/INFO

Open event without registration, free of charge  
[www.oskarvonmillerforum.de/en/  
programme.html](http://www.oskarvonmillerforum.de/en/programme.html)

LECTURE, DISCUSSION AND RECEPTION (IN GERMAN)

## Top-Research Live

Science also thrives on personalities with great experience. What motivated them? Which thoughts do they want to pass on? Together with the Munich Center for Technology in Society (MCTS), the TUM Emeriti of Excellence host the event series ‘Tech-Histories Alive – Contemporary Witnesses of the History of Science’. Here, TUM Emeriti of Excellence report from their work and research life. Their biographies not only reflect a lifetime’s achievement, they also illustrate the development of scientific progress. This summer semester, Prof. Dr. Josef A. Nossek, who held the professorship for Circuit Theory and Signal Processing at TUM from 1989 to 2016, will be speaking.

#### DATE

Tue. 16.06.2020, 6 pm – 8 pm

#### PLACE

TUM Campus Munich  
Vorhoelzer Forum, Arcisstraße 21

#### REGISTRATION/INFO

Open event without registration  
[www.emeriti-of-excellence.tum.de/  
tech-histories-alive](http://www.emeriti-of-excellence.tum.de/tech-histories-alive)

UNIVERSITY TASTER (IN GERMAN)

## One Week of Electrical and Computer Engineering



Interested in an engineering degree? Affinity for technology? The words math and physics excite you rather than scare you? If your answer to one or more of these questions is yes, then ‘Why not study it? One week of Electrical and Computer Engineering’ is for you. During the Bavarian autumn holidays, TUM’s Faculty of Electrical and Computer Engineering invites whoever is interested to see what otherwise only students get to see. This is an ideal opportunity for all those who can already imagine studying Electrical and Computer Engineering – but also for those who are not quite sure yet what this programme is about.

#### DATES

Mon. 02.11.2020 – Thur. 05.11.2020  
all day

#### PLACE

TUM Campus Munich

#### REGISTRATION/INFO

Deadline for applications from pupils from  
10<sup>th</sup> grade up and for those holding vocational  
qualifications: 15<sup>th</sup> of October 2020  
[www.ei.tum.de/studium/schnupperstudium](http://www.ei.tum.de/studium/schnupperstudium)



# A RADIANT ALUMNI



“X-RAYS WILL PROVE TO BE A HOAX”, WILLIAM THOMSON, A DISTINGUISHED BRITISH PHYSICIST, PREDICTED FOLLOWING WILHELM CONRAD RÖNTGEN’S DISCOVERY IN 1895. BUT ONLY A FEW YEARS LATER, IN 1901, RÖNTGEN RECEIVED THE NOBEL PRIZE IN PHYSICS.

The TUM Emeriti of Excellence (TUM Senior Excellence Faculty) are hosting an interdisciplinary symposium in honour of scientist Wilhelm Conrad Röntgen, an honorary doctor of TUM since 1918. The speaker’s lectures – among them Nobel Prize winner Robert Huber, several Leibniz Prize winners and numerous TUM Emeriti of Excellence – cover a wide spectrum of disciplines and demonstrate the tremendous importance of X-ray technology for modern civilisation.

*W.C. Röntgen*

SYMPOSIUM AT THE TUM SENIOR EXCELLENCE FACULTY  
(IN GERMAN)

## 125 Years of X-rays

In 2020, TUM will celebrate the 125<sup>th</sup> anniversary of the discovery of X-rays and, at the same time, Röntgen’s 175<sup>th</sup> birthday. A good reason to take a closer look at this man and his research. High-profile speakers, including numerous TUM Emeriti of Excellence, will talk about the significance of X-ray technology for various disciplines.

### Experience Nobel Laureates Live

Among the speakers is TUM Alumni Prof. Dr. Robert Huber (Diploma Chemistry 1960, Doctorate 1963, Habilitation 1968), who received the Nobel Prize in Chemistry in 1988. “Without my mentor, TUM Professor Walter Hoppe, this would not have been possible”, says Robert Huber gratefully. “I have literally absorbed science at TUM.” Here he discovered his life’s passion, Crystallography. Among other things, Robert Huber’s research is of central importance for the development of vitally important pharmaceuticals. Read the whole alumni story here:

[www.150.alumni.tum.de/robert-huber](http://www.150.alumni.tum.de/robert-huber)

The Röntgen Symposium this winter semester will present an opportunity to experience Prof. Dr. Robert Huber live. Here he will talk about ‘Structural analysis of proteins using X-ray Crystallography’. Join us and meet the TUM Emeriti of Excellence!

#### DATE

Winter semester 2020/2021

#### PLACE

TUM Campus Garching

#### REGISTRATION/INFO

Open event without registration,  
free of charge

[www.emeriti-of-excellence.tum.de/  
roentgen-symposium](http://www.emeriti-of-excellence.tum.de/roentgen-symposium)



In 1918 Wilhelm Conrad Röntgen received an honorary doctorate from TUM. The TUM.Archive still keeps his personal file.

# FOR A FUTURE WORTH LIVING FOR

## RESEARCHING TOMORROW'S FUEL

South of Munich, on the Ludwig Bölkow Campus in Ottobrunn, TUM's Algae Cultivation Centre is located. It is the only one of its kind worldwide and houses research to develop efficient processes to produce biokerosene and chemical substances from algae. In his lecture, Prof. Dr. Thomas Brück, holder of the Chair of Synthetic Biotechnology and manager of TUM's AlgaeTech facility, will present the research carried out here – exclusively for TUM Alumni (p. 46).

Further reading at [go.tum.de/471780](https://go.tum.de/471780)





RESEARCH THAT OPENS UP NEW SOURCES OF ENERGY, DEGREE PROGRAMMES PREPARING FOR JOBS IN SUSTAINABILITY, LECTURES ON CLIMATE, ENERGY-EFFICIENT BUILDINGS: TUM HAS RECOGNISED HOW IMPORTANT IT IS TO RESEARCH, TEACH AND LIVE SUSTAINABILITY AT OUR UNIVERSITY.

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The lecture series 'Environment' has a long tradition and will return for the 70<sup>th</sup> time this summer semester. Here you can hear about current environmental topics from top-class speakers. Find out more about the fuel that will be used to power next-generation aircrafts in TUM Professor Thomas Brück's lecture – exclusively for our alumni. And if you would like to get involved yourself, raid your wardrobe and join the upcoming clothes swap organised by the student council!



LECTURE SERIES (IN GERMAN)

## Lecture Series ‘Environment’

For the 70<sup>th</sup> time, the Environmental Department of the TUM Student Representation is hosting its lecture series this summer semester. Speakers from research, organisations, authorities and corporations will talk about technical solutions to environmental problems, health or climate protection under one central theme. Highlights this year are the lectures by Sylvia Kotting-Uhl (MdB) on federal environmental policy on the 3<sup>rd</sup> of June and by Prof. Dr. Michael Suda and Dr. Anika Gaggermeier on the subject of forest dieback on the 8<sup>th</sup> of July. The lecture series has become part of TUM’s established repertoire at the Munich and Garching campuses and is an excellent opportunity for alumni to revisit TUM and to find out about current environmental issues.

DATES

### TUM CAMPUS MUNICH

Every Wednesday during the lecture period, 7.30 pm – 9 pm

### TUM CAMPUS GARCHING

Every Tuesday during the lecture period, 6 pm – 7.30 pm

LECTURE (IN GERMAN)

## Algae – Tomorrow’s Potential Fuel

How can we use algae for sustainable energy production? TUM Professor Thomas Brück holds the Chair of Synthetic Biotechnology and is an internationally renowned expert in the field of algae technology. At TUM’s unique Algae Cultivation Centre in Ottobrunn, he is researching the possible applications of salt-water algae, for example to produce biofuel and carbon fibres. In this lecture he explains his research in a descriptive and entertaining way.

### DATE

Thur. 28.05.2020  
6 pm – 8 pm

### PLACE

TUM Campus Garching

### REGISTRATION/INFO

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)



## HIGHLIGHT DATES

### Federal Environmental Policy

Sylvia Kotting-Uhl (MdB)

#### DATE

Wed. 03.06.2020  
7.30 pm – 9 pm  
TUM Campus Munich

### Forest Dieback 2.0

Prof. Dr. Michael Suda  
and Dr. Anika Gaggermeier

#### DATE

Wed. 08.07.2020  
7.30 pm – 9 pm  
TUM Campus Munich

#### REGISTRATION/INFO

Open event without registration  
[asta-umweltreferat.fs.tum.de/?page\\_id=2231](https://asta-umweltreferat.fs.tum.de/?page_id=2231)

## OPEN DAY

### Renewable Resources

The KoNaRo – Centre of Excellence for Renewable Resources – in Straubing is an important partner for the implementation of the energy revolution in Bavaria: it brings together all activities related to biomass, and it is where the Campus Straubing for Biotechnology and Sustainability, the Technology and Support Centre (TFZ) and C.A.R.M.E.N. e.V. work closely together. On the Open Day, KoNaRo grants a look behind the scenes, opens its laboratories and the technical centre and displays in show gardens what the scientists are working on. Come by and expand your knowledge!

#### DATE

Sun. 19.07.2020  
all day

#### PLACE

Straubing, KoNaRo, Schulgasse 18

#### REGISTRATION/INFO

Open event with registration  
[www.cs.tum.de/campus-straubing/events/?lang=en](https://www.cs.tum.de/campus-straubing/events/?lang=en)

## CLOTHING SWAP

### Menswear wanted!

Each season brings a new style, new cuts, different colours. The wardrobe is full, but you still buy new things. The Environmental Department of the Student Council of TUM wants to do something about the consumerism of clothing and organises a clothes swap once per semester. Unused pieces find new owners: participants put the clothes they brought on tables sorted by size and can take other pieces home. But you can also just 'get rid of' clothes – menswear is in demand – and thus support the campaign. Whatever is left at the end of the party will be donated. Declutter, join, and help the environment!

#### DATE

Once per semester

#### PLACE

TUM Campus Munich

#### REGISTRATION/INFO

Open event without registration  
[asta-umweltreferat.fs.tum.de/?page\\_id=2928](https://asta-umweltreferat.fs.tum.de/?page_id=2928)

## LECTURE (IN GERMAN)

### Sustainability's visions for the future

The Oskar von Miller Forum welcomes Prof. Dr. Harald Welzer. The sociologist and social psychologist is co-founder and director of FUTURZWEI.Stiftung Zukunftsfähigkeit, director of the Norbert Elias Center for Transformation Design & Research at Europa-Universität Flensburg and permanent visiting professor at the University of St. Gallen. He has written numerous books on sustainability and will be speaking about 'Sustainability's Visions For The Future' in July. Alumni are very welcome to attend.

#### DATE

Thur. 02.07.2020  
6.30 pm – 8 pm

#### PLACE

Munich, Oskar von Miller Forum

#### REGISTRATION/INFO

Open event without registration, free of charge  
[www.oskarvonmillerforum.de/en/programme.html](https://www.oskarvonmillerforum.de/en/programme.html)



# INSPIRATION FROM ROLE MODELS

Female  
Keynote Speaker  
at the

**WOMEN OF TUM-  
TALKS 2020**

on  
**MOTIVATION**

15,468 FEMALE STUDENTS, 110 FEMALE PROFESSORS AND WITH EVERY YEAR MORE ALUMNAE: THE WOMEN OF TUM ARE A VIBRANT NETWORK THAT IS GROWING RAPIDLY AND CONNECTS WOMEN ACROSS CONTINENTS, GENERATIONS, HIERARCHIES AND DEPARTMENTS.

Women from research and business meet at the Women of TUM Talks, the Afterwork Events or online in the TUM Community, where they mutually support and inspire each other. The Women of TUM Network puts the Women of TUM into the public eye and makes them visible online with the hashtag #womenofTUM. As important role models, the Women of TUM support women for the future – both in the workplace and at home.

[www.150.alumni.tum.de/en/women-en](http://www.150.alumni.tum.de/en/women-en)



## Investigating Motivation

“Our experiments show that hungry individuals continue to increase their performance”, Prof. Dr. Ilona C. Grunwald Kadow explains. Using fruit flies, she is investigating how motivation works. “Until now, it was thought that this quality was only found in humans and other higher organisms.” But that is not the case: using a kind of treadmill, the team around Ilona C. Grunwald Kadow is testing how hard fruit flies will try to reach their food. At this year’s **Women of TUM Talks**, taking place on the 7<sup>th</sup> of October 2020 at the Oskar von Miller Forum, the TUM professor will also talk about the secret of motivation.

Learn more about Ilona C. Grunwald Kadow’s research at [go.tum.de/260965](http://go.tum.de/260965)

EVENTS FOR FEMALE PUPILS (IN GERMAN)

## Bring Your Girls!



Many children want to pursue their parent's profession or study at the same university as their parents. TUM offers its alumni and their offspring many opportunities to get to know TUM or to try their hand at science and technology. And the STEM subjects (science, technology, engineering, and mathematics) are also becoming increasingly attractive for girls. Especially for female pupils we have put together what TUM offers. Why not come and visit us with your daughter, god- or granddaughter!



WOMEN OF TUM TALKS (IN GERMAN)

## Learning How to be Motivated?

The Women of TUM Talks inspire and encourage. They provide a stage for the Women of TUM and bring role models to the public eye. And they encourage them to pursue their own goals. This year's female key note speakers from the fields of science, business and sports will give impetus on the topic of motivation. They share and discuss personal and professional insights and give advice, among other things on the questions: Why are people motivated differently? Can motivation be learnt? How do I motivate my team? The subsequent mixer will offer opportunity to get to know each other, exchange ideas and engage in casual networking.

### DATE

Wed. 07.10.2020  
6.30 pm – 9.30 pm

### PLACE

Munich, Oskar von Miller Forum  
Oskar-von-Miller-Ring 25

### REGISTRATION/INFO

[www.150.alumni.tum.de/en/women-en](http://www.150.alumni.tum.de/en/women-en)





## DATES

### Female TUM Explorers: STEM University Adventure

Mon. 27.07.2020 to Fri. 14.08.2020  
[www.schueler.tum.de/minterlebnis](http://www.schueler.tum.de/minterlebnis)

### Being a Scientist for a Day

On two Saturdays a month  
[www.schueler.tum.de/schuelerinnen/](http://www.schueler.tum.de/schuelerinnen/)

### Workshop in Electrical Engineering and Information Technology for Pupils

[www.ei.tum.de/en/degree/  
high-school-students](http://www.ei.tum.de/en/degree/high-school-students)

#### WOMEN OF TUM ONLINE WORKSHOP (IN ENGLISH)

## Grow and Glow

After graduation TUM Alumna Ina Distel (Master Consumer Affairs 2012) founded her own strategy consulting business with a focus on corporate culture and value-based leadership coaching. The workshop for the Women of TUM wants to inspire and help to access everybody's full energy and inner strength and to grow beyond oneself. In order to establish a true connection to your body, the integration of physical elements such as breathing exercises, yoga and meditation is important. Building on this, existing leadership skills as well as presentation and body language techniques are further improved.

#### DATE

June 2020

#### PLACE

Online

#### REGISTRATION/INFO

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

#### WOMEN OF TUM AFTERWORK ONLINE (IN GERMAN)

## Superpower Clarity

During her Master's degree Valentina Luspai (Master Sustainable Resource Management 2017) already worked as a freelance coach. In 2019 she also set up a company that evaluates the competence-based deployment of employees. In her keynote speech, Valentina Luspai gives insights into her coaching work. She points out ways to gain clarity in life and to apply this gained 'superpower' in a way that will make you really love what you do. You will also have the opportunity to ask questions and share your own experiences.

#### DATE

July 2020  
7 pm – 10 pm

#### PLACE

Online

#### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

#### WOMEN OF TUM AFTERWORK EVENT (IN ENGLISH)

## AI and Privacy

Artificial Intelligence Expert Prof. Dr. Laura Leal-Taixé currently leads the Dynamic Vision and Learning Group in Computer Vision & Machine Learning at TUM. She will start the networking event with insights into her award winning research in the fields of Computer Vision & Machine Learning. She will present how she uses artificial intelligence to approach the complex task of "giving eyes to a computer" – an essential step for applications such as autonomous driving. She will also share lessons about potential privacy issues. After the talk there will be time to discuss and to network with the other participants.

#### DATE

September 2020  
7 pm – 10 pm

#### PLACE

TUM Campus Munich

#### ANMELDUNG

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

# AT HOME ALL OVER THE WORLD



## AMBASSADOR OF TUM

Prof. Dr. Subhasis Chaudhuri enjoys being a guest at TUM. In order to get to know as many research perspectives and scientific approaches as possible, the Indian-born scientist studied and researched in six countries. “You will only get a feel for what makes good research through international research assignments”, he explains. He completed his master’s degree in Electrical Engineering in Canada and then went to the US for his doctorate. As a visiting professor, his path led him to Singapore, Hong Kong, Paris, Erlangen-Nuremberg – and since 2005 several times to TUM in Munich. “For that TUM is definitely my top choice”, says Subhasis Chaudhuri. Here, the top researcher in the field of image processing has been able to significantly expand the scope of his pioneering work. In the international research community his studies on so-called machine vision and machine learning are considered groundbreaking. He is also one of the TUM Ambassadors. TUM President Thomas F. Hofmann awarded him this honorary title in December 2019.

ITS PRESENCE ON THE INTERNATIONAL STAGE IS ONE OF TUM'S PARTICULAR STRENGTHS. WITH A TOTAL OF SIX INTERNATIONAL LOCATIONS, IT HAS THE STRONGEST APPEAL AMONG GERMAN UNIVERSITIES FOR STUDENTS AND SCIENTISTS FROM ABROAD.

TUM is supporting and encouraging international students to enter the German labour market. In addition, a wide range of foreign language courses and degree programmes in English prepare domestic students for an international career right from the start. As a TUM Alumni, you can also establish international ties. Either at the locations at home in Bavaria or at the various branches around the world: join the visiting scientists from all over the world on an excursion to Poing, take one of the Global Minds seminars or use a webinar to prepare yourself for an international assignment.





WEBINAR SERIES (IN GERMAN)

## Global Minds Goes Online

Would you like to go abroad (again): as part of your studies, straight after or with an employer? There are always opportunities to work abroad short or long-term. In cooperation with the TUM Language Centre the webinar series 'Global Minds' will discuss important things to pay attention to and questions that might come up. Each webinar will present a specific country – this summer semester it will be Japan, the USA/UK and Sweden – with its specific framework, the corresponding application process and intercultural challenges.

DATES

### Japan

Tue. 05.05.2020

### Schweden

Wed. 27.05.2020

### USA / UK

Fri. 05.06.2020

TUM CAIRO (IN ENGLISH)

## German Science Day

The aim of the German Science Day in Cairo, an annual DAAD event, is to bring together promising young academics and researchers from Egypt to learn about the recent scientific trends in Germany and explore the options of doing their research at a German university or research institute. Last year's event attracted more than 300 PhD and postdoc candidates, who learnt about the production of eco-friendly cements and energy storages with power-to-heat concepts. This year's program will soon be announced on TUM Cairo's website.

### DATE

Thur. 16.07.2020

all day

### PLACE

TUM Cairo

### REGISTRATION/INFO

Via email to TUM Cairo

Liaison Officer Heba Afifi: [cairo@tum.de](mailto:cairo@tum.de)[www.international.tum.de/en/cairo](http://www.international.tum.de/en/cairo)

## TUM CAIRO

TUM's office in Cairo was established in 2012 and since then it has been a centre for networking and mutual knowledge transfer between TUM and its partners in the Middle East and North Africa. The office's core tasks include initiating industry and research cooperation, recruiting top students and doctoral candidates, and maintaining a dynamic alumni network. TUM Cairo aims at fostering intercultural understanding as a key to science and technology in order to make a positive impact in the world. TUM Cairo is one of the six TUM Liaison Offices alongside Beijing, Brussels, Mumbai, San Francisco and São Paulo. The Cairo office is headed by Liaison Officer Heba Afifi.

[www.international.tum.de/cairo](http://www.international.tum.de/cairo)



#### PLACE

Online

#### ANMELDUNG/INFO

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)



SUNDAY TRIP (IN ENGLISH)

## On Tour With Our Guests

TUM welcomes many international postdocs and guest researchers and provides them with numerous services that support them in everyday life, including a special cultural program. This summer, TUM's international guests are invited to discover the Wildlife Park Poing, and TUM Alumni can join them for this tour. The Park offers the possibility of observing many native animals up close. The special character of the park is the ample, nature-orientated design of the terrain, enclosures and aviaries. Join us on a guided tour to watch wolves, lynxes and bears as well as many other animals in their natural environment. We will take a comfortable walk around the park, learn as we go along and experience TUM family.

#### DATE

Sun. 23.08.2020

all day

#### PLACE

Wildpark Poing

#### REGISTRATION/INFO

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

WEBINAR (IN ENGLISH)

## Kick-Start Your Global Career

Do you dream of working abroad, but feel unsure about where to begin? In this webinar, we'll explore the pros and cons of working abroad, and the key aspects to consider before making an application. You will learn where to search for opportunities as well as useful strategies to support your global job search.

#### DATE

Mon. 15.06.2020

5 pm – 6 pm

#### PLACE

Online

#### REGISTRATION/INFO

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

WEBINAR (IN ENGLISH)

## Job Hunting and Applications in English Speaking Countries

Searching and applying for a job abroad can be time consuming and confusing, but it doesn't need to be. In this webinar, we'll explore the methods and tools you can use to optimize your job search. You will also learn essential tips on how to make your written job applications stand out in English-speaking countries, including how to tailor your applications to the job description.

#### DATE

Thur. 18.06.2020

5 pm – 6 pm

#### PLACE

Online

#### REGISTRATION/INFO

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

# LEARNING AND GROWING TOGETHER





TUM IDENTIFIES AS AN ENTREPRENEURIAL UNIVERSITY THAT PROMOTES AND SUPPORTS PROMISING SPIN-OFFS. WHEN IT COMES TO STARTING A BUSINESS, THE EXCHANGE BETWEEN EXPERIENCED ENTREPRENEURS AND THOSE FROM THE NEXT GENERATION IS PARTICULARLY IMPORTANT. THE ANNUAL TUM ENTREPRENEURSHIP DAY, FOR EXAMPLE, OR THE IKOM START-UP, WHICH OFFERS A PLATFORM FOR YOUNG TUM COMPANIES, ARE IDEAL OCCASIONS FOR THESE INTERACTIONS.

Another opportunity for TUM students and alumni for mutual learning are the career events and webinars or the JobTalks, which give you the chance to seek advice on career issues from experienced TUM Alumni. Share your own experience or benefit from those of others. No matter in which phase of your life you are, you are cordially invited.



## TWO SUCCESSFUL ENTREPRENEURS

Student Paul Kaiser gladly takes his mentor's advice. He does not want to miss out on TUM Alumni Dr. Thomas Briegel's (Diploma Informatics 1996, Doctorate 1999) expert knowledge on consulting and setting up a business. The computer scientist is a successful entrepreneur with more than twenty years of consulting experience in international top-management. Yet Paul Kaiser, still a Master's student himself, is already running his own consultancy for the construction sector alongside his studies. Since early 2019, the two are a tandem in TUM's Mentoring Programme for Students by Alumni. "Talking shop about specific topics together is extremely helpful for me and at the same time interesting for my mentor", Paul Kaiser says confidently. Thomas Briegel is intrigued by his mentee's zest for action and willingness to take risks. "I wouldn't have dared to do that twenty years ago!" Paul Kaiser replies calmly: "You just have to do it. Nothing ventured, nothing gained".

Read more about them at [www.150.alumni.tum.de/en/briegel-kaiser-en](http://www.150.alumni.tum.de/en/briegel-kaiser-en)

TUM ENTREPRENEURSHIP DAY 2020

## It's all About Entrepreneurship!

The TUM Entrepreneurship Day exists since 2013 and it offers young businesses of TUM a platform. In addition to the opportunity of exchanging ideas with start-up consultants and other start-ups, workshops and pitch competitions are also being offered. As an annual highlight, the TUM Presidential Entrepreneurship Award will be presented to an outstanding TUM spin-off; last year it went to the company Scintomics of TUM Alumna Saskia Kropf (Diploma Mechanical Engineering 2007). Starting this year, the TUM Entrepreneurship Day will be even bigger and more diverse – keep your eyes peeled and register now.

### DATE

Thur. 25.06.2020  
2 pm – 8 pm

### PLACE

TUM Campus Munich  
Audimax, Arcisstraße 21

### REGISTRATION/INFO

[www.tum.de/en/innovation/entrepreneurship/tum-entrepreneurship-day](http://www.tum.de/en/innovation/entrepreneurship/tum-entrepreneurship-day)

## TUM CAREER SERVICES

# Career Offers for Students and Alumni

You have completed your studies and are now deciding how to proceed professionally? You are at a crossroads in your career and are looking for a new direction? Whether you want to get ready for the start of your career or are already in the first stages: TUM's Career Service will provide you with professional guidance and support in your planning – conveniently online!

**Take advantage of the Alumni & Career offers:** [www.together.tum.de/en/career](http://www.together.tum.de/en/career)

## More Than 50 Career Webinars

Here you will learn everything important for your application and career: from salary negotiations to employment contracts, from assessment centre to unsolicited applications.

### TOPICS AND DATES

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

## ADVICE FROM COLLEAGUES (IN GERMAN)

## Adventure Management Online

People in leadership positions have a lot of questions, too! A group of managers has formed amongst the TUM Alumni, which regularly meets up to exchange ideas and information – now it has moved online. Whether you want to talk about managing staff or new challenges you are facing in your everyday work-life: the members share their issues with each other and benefit from talking to like-minded people, their experience and ideas. Inexperienced people who have only recently taken on a management position are welcome, as well. Come and join!

### DATES

Thur. 14.05.2020, Thur. 18.06.2020,  
Thur. 23.07.2020, Thur. 24.09.2020  
6.15 pm – 8 pm

### PLACE

Online

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

## WEBINAR – ALUMNI SPECIAL (IN ENGLISH)

## Manage Your Salary

This webinar will give you a good understanding of all the aspects important in negotiating your salary. We will look into defining your market value and finding the best strategy to achieve the salary you deserve. Included in the webinar is a discussion of contractual implications and how salaries are composed in Germany.

### DATE

Mon. 06.07.2020  
5 pm – 6 pm

### PLACE

Online

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

## TUM CAREER FAIRS (IN GERMAN)

## IKOM

With over 300 companies and 15,000 visitors over the course of four days, IKOM is the largest student career fair in Germany. Numerous students from various faculties make up the volunteer team of IKOM – and independently organise the event. Meanwhile, the main event in June has some offshoots, such as the awarding of the IKOM Award to companies with outstanding responsibility – in 2019 one of the prizes went to EOS GmbH, established by TUM Alumni Hans J. Langer [[www.150.alumni.tum.de/en/hans-langer-en/](http://www.150.alumni.tum.de/en/hans-langer-en/)]. Alumni are very welcome to attend!

### DATES

#### IKOM

Mon. 29.06.2020 – Thur. 02.07.2020

#### IKOM Consulting Day

Wed. 20.05.2020

#### IKOM Start-up

Wed. 01.07.2020

### REGISTRATION/INFO

Open event without registration  
[www.ikom.tum.de](http://www.ikom.tum.de)

## Applications Check-up

Are you preparing application documents for an interesting position? Here you can have your cover letter and CV reviewed (in German and English).

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

## Personal Counselling

Are there specific career-related issues on which you need advice? Our Career Team is available by phone and e-mail. To make an appointment call +49 89 289 22186

### INTERESTED?

Send us your inquiry by e-mail to [career@tum.de](mailto:career@tum.de)

## Job and Internship Exchange

Hundreds of internship and job offers in Germany and abroad can be found in the TUM Job and Internship Exchange. These employers are specifically interested in students and alumni of TUM.

### INFORMATION

[www.tum.de/jobboerse](http://www.tum.de/jobboerse)

TUM MENTORING JOBTALK (IN VARIOUS LANGUAGES)

## One Question – One Conversation

You would like to know more about the daily routine of a consultant or about the training to become a patent attorney? Formulate your question and we will put you in touch with an experienced matching Alumni as soon as possible. JobTalk is instant mentoring: students (and also alumni) are asking specific questions, alumni answer and provide their assessment and experience. Personal contact via telephone, Skype or a meeting is possible in a timely and uncomplicated manner. This is how easy inter-generational exchange can be!

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

### INFORMATION

[www.together.tum.de/en/job-talk](http://www.together.tum.de/en/job-talk)

TUM MENTORING NETWORK MEETING ONLINE (IN GERMAN)

## Principles of Sustainability

At the TUM Mentoring Network Event, TUM Alumna Ronja Wolf (Master Sustainable Resource Management 2016), associate at SYSTEMIQ, and TUM Alumni Rafael Kirschner (Diploma Mechanical Engineering 2006, Doctorate 2012), Managing Director of WeWash, will discuss the different aspects of sustainability, circular economy and social responsibility. Afterwards there will be time for questions and to pursue the topic in further discussions.

### DATE

Wed. 17.06.2020  
7 pm – 9 pm

### PLACE

Online

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

TUM MENTORING NETWORK MEETING (IN GERMAN)

## Ethics & Business

Social responsibility, ethical management and moral conduct are becoming increasingly important in business, in order to generate economic success. The TUM Mentoring Network Meeting addresses this development and examines its effects. Afterwards there will be plenty of time to discuss, ask questions and exchange ideas within the network.

### DATE

Wed. 23.09.2020  
7 pm – 9 pm

### PLACE

TUM Campus Munich  
Vorhoelzer Forum, Arcisstraße 21

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)



# A SUCCESSFUL DOCTORATE

FOCUS: AN INDUSTRY CAREER

## Newsletter for Doctorate Students and Postdocs

Are you a doctoral student or postdoc at TUM and interested in an industry career? Around half of all alumni who completed their doctorates at TUM now work in industry. The newsletter for doctoral students and postdocs is published four times a year in German and English and keeps you updated on interesting events and opportunities for further education on the subject. It also presents TUM Alumni who have earned their doctorate here and are now successfully working in business and industry.

You can easily and conveniently subscribe to the newsletter yourself in your personal TUM Community profile: log in at [www.community.tum.de](http://www.community.tum.de), click on 'My Profile' on the left side and then on the tab 'Subscriptions'. Here you can manage your subscriptions.



WEBINAR (IN GERMAN AND ENGLISH)

## Convincing CVs

Rarely do the career paths of PhD students and postdocs fit into standard CV templates. Research, projects, publications and much more need to be included in a concise manner on a few pages. In this webinar you will learn different ways to present all your skills and experiences in a convincing way. The webinar is available in German and English.

### DATES

Tue. 05.05.2020 (English),  
Wed. 22.07.2020  
10 am – 11 am

### PLACE

Online

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

A DEGREE FROM TUM IS A QUALITY MARK. WHEN IT COMES TO THE QUALITY OF TUM GRADUATES, INTERNATIONAL COMPANIES CONSIDER TUM TO BE AMONG THE WORLD'S BEST. FOR THE SECOND TIME IN A ROW, TUM WAS RANKED SIXTH IN THE GLOBAL UNIVERSITY EMPLOYABILITY RANKING IN 2019.

Doctoral students at TUM work with internationally recognised experts on the burning issues of our time. Their research results contribute to improving our understanding of the world, developing sustainable technologies and enhancing our quality of life. They are highly sought-after on the job market – not least because they often already get involved with industry projects during their doctorates.

WEBINAR (IN GERMAN)

## The Industry-Based Doctorate

Working in the industry and doing a doctorate at the same time: this is possible in the framework of an industry-based doctorate and those who have done it are highly sought-after from employers. At the same time, doctorate students who work in the corporate world oftentimes have a substantially more intense workload and less contact with professors and co-researchers. In this interactive webinar TUM Alumni Dr. Frederik Edwards (Doctorate Management 2015) will share his own experiences and answer your questions.

### DATE

Mon. 11.05.2020  
5 pm – 6 pm

### PLACE

Online

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

ADVICE AND SUPPORT FOR YOUNG SCIENTISTS

## Mentoring for Scientists

Mentoring for Scientists connects international research alumni and guest scientists with young doctoral students and postdocs of TUM. The focus here is on the transfer of experience and the personal exchange between researchers from different career levels.

Application is possible at any point in time

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

### INFORMATION

[www.together.tum.de/en/commitment/knowledge/mentoring-for-scientists](http://www.together.tum.de/en/commitment/knowledge/mentoring-for-scientists)

WEBINAR (IN GERMAN AND ENGLISH)

## Efficient Job Hunting

Finding an industry job after having completed a doctorate can be challenging – especially for candidates with an interdisciplinary background. This webinar will provide you with valuable advice on how to go about finding possible careers, labour markets and companies. We will also look at how to use key words effectively for job hunting. The webinar is available in both English and German.

### DATES

Tue. 05.05.2020 (English),  
Wed. 08.07.2020  
10 am – 11 am


### PLACE

Online

### REGISTRATION

[www.together.tum.de/en/events](http://www.together.tum.de/en/events)

# WE CONGRATULATE OUR GRADUATES

The background of the page is a photograph of three graduates in black academic gowns with green stoles, walking in a procession during a graduation ceremony. They are wearing black mortarboard caps. The scene is set against a dark, textured background, possibly a stage or a large hall.

TUM Asia, TUM's campus in Singapore, is celebrating its graduates every year with a big graduation ceremony. Last year President Emeritus Wolfgang A. Herrmann and TUM President Thomas F. Hofmann personally presented the Bachelor's and Master's certificates in the presence of the graduates' friends and family. Wolfgang A. Herrmann sincerely congratulated the graduates and welcomed them as alumni: "As a proud alumni and member of the Technical University of Munich, I welcome you to the future of TUM. You now enrich the alumni community of TUM and we are proud of you."

More about this story in TUM Asia Digest, TUM Asia's newsletter:

[tum-asia.edu.sg/media/newsletter](https://tum-asia.edu.sg/media/newsletter)



WORK AND RESEARCH AT TUM IS ALWAYS IN STEP WITH THE TIMES. THE YOUNG GRADUATES PROUDLY SET OUT INTO THE WORLD WITH THEIR VALUABLE CERTIFICATES IN THEIR POCKETS. ALONGSIDE RESEARCH AND WORK, TEACHING AND LEARNING, CELEBRATING TOGETHER AS A TUM FAMILY IS IMPORTANT TO US.

The day our graduates receive their certificates is always a very special day. To honour their achievements the faculties at TUM celebrate the farewell of their former students once a semester or year. Some faculties combine the graduation ceremonies with a Faculty Day and also invite alumni.



#### GRADUATION CEREMONIES

## Passed With Success!

This summer semester, the following faculties, among others, are celebrating their graduates.

Updated information on the events can be found on the respective faculty websites.

#### DATES

Physics Day: Academic  
Ceremony and Summer Festival  
Wed. 15.07.2020  
from 2 pm  
TUM Campus Garching  
[www.ph.tum.de/latest/events](http://www.ph.tum.de/latest/events)

Faculty Day Department of  
Civil, Geo and Environmental  
Engineering  
Fri. 03.07.2020  
TUM Campus Munich  
[www.bgu.tum.de/en/faculty/tag-der-fakultaet](http://www.bgu.tum.de/en/faculty/tag-der-fakultaet)

Department of  
Mechanical Engineering  
Fri. 10.07.2020  
TUM Campus Garching  
[www.tdf.mw.tum.de](http://www.tdf.mw.tum.de)

Department of Chemistry  
Fri. 24.07.2020  
TUM Campus Garching  
[www.t3.ch.tum.de/en/faculty/graduation-day](http://www.t3.ch.tum.de/en/faculty/graduation-day)

## +++ Alumni Ticker +++ Alumni Ticker +++ Alumni Ticker +++

■ In December 2019, **Dr. Karl Busch (Diploma Mechanical Engineering 1954, Doctorate 1958)** was made Honorary Senator of TUM for his services to the future development of the university. TUM President Thomas F. Hofmann honoured the visionary of vacuum technology for his many years of commitment to his alma mater. Karl Busch was particularly committed to the future significance of robotics in industry. Together with his wife Ayhan, he founded his own company Busch Vacuum Solutions in 1963, which has since become a global family business for vacuum systems with 63 locations in 43 countries. ■ **Prof. Dr. Andrea Büttner (Doctorate Food Chemistry 1999, Habilitation 2006)** took over the management of Fraunhofer Institute for Process Engineering and Packaging IVV in Freising on November 1<sup>st</sup>, 2019. In the recent years, the scientist has established the Product Effects business unit and the Department of Analytical Sensor Technology at the institute. ■ Since September 2019 **Ulrich Gampl (Diploma Electrical Engineering and Information Technology 1991)** has been in charge of the Trade Supervisory Authority at the Upper Palatinate government. Prior to this, he was employed at the Bavarian State Ministry of the Environment and Consumer Protection in the unit 'Elementary Laws' from 2015 to 2019. ■ Since the beginning of January 2020, **Andreas Ganai (Bachelor Agricultural Sciences 2013, Master 2016)** is the new managing director of Verein Obstregion Bodensee. For four years prior, he was managing director of Bayerische Jungbauernschaft. ■ **Prof. Dr. Angelika Görg (Doctorate Brewing and Food Technology 1973)** is TUM's first Vice President for Compliance starting April 1<sup>st</sup>, 2020. The award-winning scientist was Professor of Proteomics at TUM from 1993 to 2009. After her retirement, TUM appointed her TUM Emerita of Excellence. This circle of outstanding personalities supports TUM with their experience. Among other things, Prof. Görg was TUM's deputy ombudsperson for three years. ■ **Claus Haberda (Diploma Agricultural Sciences 1990)** has been Spokesman of Roche Diagnostics since January 1<sup>st</sup>, 2020 and thus also a member of the Executive Board of Roche Germany. He has been with the company since 1992 and was most recently Head of Finance and Controlling at the Mannheim and Penzberg locations. ■ **Theresa Hautzinger (Master Environmental Planning and Ecological Engineering 2019)** has been managing Öko-Modellregion Ampertal since the beginning of November 2019. Together with **Jakob Zips (Bachelor Forest Science and Resource Management 2015, Master Environmental Planning and Ecological Engineering 2019)**, she has already provided decisive support to the Ampertal municipalities during the application process. For their Master's theses at TUM, the two had examined the activities in the already existing eco-model regions and developed a concept for the Ampertal. ■ The successful entrepreneur and investor **Felix Haas (Diploma Electrical Engineering and Information Technology 2006)** was appointed TUM Entrepreneur of Excellence 2020 by TUM President Thomas F. Hofmann. TUM awards this prize to outstanding entrepreneurs. They support the next generation of start-ups with their valuable experience. ■ The new head of the Forest Department at the Traunstein Office for Food, Agriculture and Forestry is **Tassilo Heller (Bachelor Forest Science and Resource Management 2013)**. Due to his previous legal clerkship in Traunstein he knows the area well. Before he came to Traunstein, he worked as a Forestry Commissioner in Passau-Rothalmünster, where he was involved repairing the damages caused by storms and bark beetles. ■ Since mid-September 2019, the Office for Food, Agriculture and Forestry in Passau has a new Head of the Forestry Division and Deputy Administrator: **Dr. Karin Höglmeier (Bachelor Forest Science 2007, Master 2008, Doctorate 2015)**. Her prior position was Head of Division at the Bavarian Ministry of Food, Agriculture and Forestry. ■ **Prof. Dr. Bettina Jungwirth (State Examination Medicine 1999, Doctorate 2002, Habilitation 2010)** has been the new Director of the Department of Anaesthesiology at Universitätsklinikum Ulm since February 1<sup>st</sup>, 2020. Prior to this, she was Professor of Anaesthesiology at the TUM School of Medicine. ■ **Götz Kessler (Diploma Landscape Architecture and Landscape Planning 1996)** has been head of Regensburger Stadtbau GmbH since October 2019. For the previous 13 years he worked in management positions at the Münchner Kommunalen Wohnbaugesellschaft GEWOFA and was head of Stadtbau Waldkraiburg. ■ **Dr. Tobias Kiel (State Examination Medicine 2007, Doctorate 2010)** has been the new Chief Physician of the Clinic for Anaesthesiology and Intensive Care at Landshut Hospital since February 1<sup>st</sup>, 2020. He came from Arberlandklinik Zwiesel, where he was Chief Physician of the Anaesthesiology and Intensive Care unit. ■ Unicum Foundation has made **Prof. Dr. Gerhard Krump (Diploma Electrical Engineering and Information Technology 1988, Doctorate 1993)** Professor of the Year in the category 'Natural Sciences/Medicine'. He is Professor of Acoustics and Media Technology at the Deggendorf Institute of Technology. ■ Since January 1<sup>st</sup>, 2020 **Tobias Kunst (Diploma Surveying and Mapping 1992)** is Chairman of the Working Committee of the Surveying Authorities of the Länder of the Federal Republic of Germany (AdV). He is Senior Ministerial Councillor at the Bavarian Ministry of Finance and Home Affairs. ■ **Maximilian Lauktien (Bachelor Management and Technology 2014, Master 2016)** took over the management of HMC Europe GmbH at the end of 2019. He was previously responsible for the technical department of the laboratory equipment specialised trade. ■ As a managing director and partner **Tobias Mehlsam (Diploma Civil Engineering 2004)** has been complementing the management team of Hasenkopf Industrie Manufaktur since November 1<sup>st</sup>, 2019. Before this post he was the sales manager of the DACH region and Scandinavia at Corian manufacturer DuPont. ■ **Bastian Nominacher (Master Finance and Information Management 2011)**, **Martin Klenk (Bachelor Informatics 2010, Master 2012)** and **Alexander Rinke (Bachelor Mathematics 2010)** have been awarded the Deutscher Zukunftspreis for their company Celonis. The prize is awarded by the Federal President and is endowed with 250,000 euros. The award honours outstanding future-oriented technologies that lead to products ready to be implemented. Celonis develops a process mining software that detects deviations

from targets before they occur. ■ Since March 15<sup>th</sup>, 2020 **Prof. Dr. Fritz Pörnbacher (Diploma Electrical Engineering and Information Technology 1985, Doctorate 1989)** is the new President of Landshut University of Applied Sciences. He came to the university in 1995 and is professor at the Faculty of Electrical and Industrial Engineering. ■ **Prof. Dr. Gallus Rehm (Diploma Civil Engineering 1951, Doctorate 1957)**, Honorary Senator of TUM and founding donor of the TUM University Foundation, was awarded the Benemerenti Medal by Reinhard Cardinal Marx in November 2019. He was honoured for his achievements regarding the renovation of the Church of St. Martin and Kastulus in Landshut. This renovation is regarded as a masterpiece of engineering. ■ **Prof. Dr. Wolfgang Reitzle (Diploma Mechanical Engineering 1971, Doctorate 1974; Diploma Ergonomics and Management 1975)** was appointed to the TUM Board of Trustees. He is Chairman of the Supervisory Board of Continental AG and Chairman of the Board of Directors of Linde plc. During his time as a member of the BMW Board of Management, he shaped the market launch of some of the car manufacturer's most successful products to date, before joining Ford as Group Vice-President in 1999. From 2003 to 2014 he was Chief Executive Officer of Linde AG. Since 2005, he has also been an Honorary Professor at TUM. ■ Power management company Eaton has appointed **Dr. Stefan Rohmoser (Diploma Physics 2002)** Managing Director of German Sales effective December 1<sup>st</sup>, 2019. He joined Eaton CEAG Emergency Lighting Systems in 2016. As General Manager, his responsibilities included a key product line's development and project management. ■ **Dr. Michael Schmidt (Diploma Forest Science 2003, Doctorate 2014)** is the new head of the Food, Agriculture and Forestry Office Kulmbach since November 1<sup>st</sup>, 2019. He was previously Deputy Administrator. ■ Since January 1<sup>st</sup>, 2020, **Prof. Dr. Helmut Schönenberger (Doctorate Management 2005)** has been TUM's new Vice-President for Entrepreneurship. He co-founded UnternehmerTUM in 2002 and has since been CEO of TUM's affiliated institute. Under his leadership, UnternehmerTUM has become one of the largest and most successful centres for innovation and entrepreneurship in Europe. Last year, TUM appointed him Honorary Professor for Entrepreneurship Practice. ■ **Christoph Schröder (Diploma Mechanical Engineering 1991, Diploma Ergonomics and Management 1993)** has been the new Director of the BMW plant in Dingolfing since November 1<sup>st</sup>, 2019 and thus of the car manufacturer's largest European production site. He has been with BMW for 26 years and was most recently director of the plant in Steyr, Austria. ■ In November 2019, **Dr. Johann Sellner (Doctorate Medicine 2009)** took over the Department of Neurology at Landeskrankenhaus Mistelbach-Gänserndorf in Austria. For the past seven years he was employed at Christian-Doppler-Klinik am Uniklinikum Salzburg, three years of which he spent as Chief Physician. ■ Since December 2019, **Isabel Strehle (Diploma Architecture 2004)** is the new Head of Department of Urban Development and Transport Facilities in the City of Aachen. She most recently worked for the City of Cologne: first as Head of the Department of Urban Development, Planning and Construction and personal secretary to the alderman, and finally in the Lord Mayor's office as Specialist for Urban Development. ■ **Prof. Dr. Silke Wieprecht (Diploma Civil Engineering 1991)** has been a member of the Board of Directors of the German Association for Water, Wastewater and Waste since January 1<sup>st</sup>, 2020. She has been heading the Department of Hydraulic Engineering and Water Resources Management at the University of Stuttgart since July 2003.

## TUM Ambassadors 2019

For many decades, international guest researchers have been coming to TUM for shorter or longer stays. They enrich our university not only through their scientific expertise and international experience, but also through their eagerness to cooperate and their multifaceted commitment. Every year since 2013, the President of TUM is honouring some of those international top-level scientists with the title of 'TUM Ambassador', acknowledging them as representatives of all the TUM Research Alumni in the world.

In 2019 the following Research Alumni have received the award:

Prof. Subhasis Chaudhuri from the Indian Institute of Technology ■ **Prof. Clotilde Fermanian Kammerer** from the Université Paris-Est Créteil in France ■ **Prof. Audrey Korsgaard** from the University of South Carolina in the United States ■ **Prof. Anca Muscholl** from the Université de Bordeaux in France ■ **Prof. Alessandro Reali** from the Università degli studi di Pavia in Italy ■ **Prof. Shengjing Tang** from the Beijing Institute of Technology in China ■ **Prof. Bing Wang** from the Tsinghua University in China

More about this at [www.together.tum.de/en/ambassadors](http://www.together.tum.de/en/ambassadors)



## IMPRINT

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- 42 Deutsches Röntgen-Museum
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- 67 Adobe Stock/WoGi (paper)

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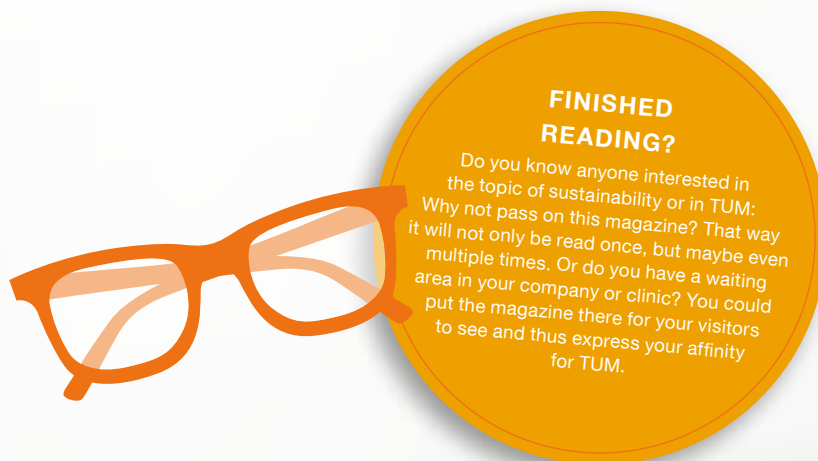
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in some places only serves the text's readability.  
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# KontakTUM

## on Paper & Online

Twice a year the Alumni Magazine is published in printed form. The contents of KontakTUM have been selected with great care and are researched and edited exclusively for you, the TUM Alumni. For publication, TUM will continue to opt for the paper version of the magazine. This is an expression of our appreciation of the magazine's content and especially of our readers – the Alumni of TUM.



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# Amadeus, moving travel forward

Travel broadens horizons, creates connections and builds economies. Travel powers progress. And Amadeus powers travel.

As a travel technology company, we build the critical solutions that help airlines and airports, hotels and railways, search engines, travel agencies, tour operators and other travel players to run their operations and improve the travel experience, billions of times a year, all over the world.

We've been doing it for more than 30 years, and we're just getting started. Innovating. Moving fast. Working with customers and partners to power better, more rewarding journeys. Leading the industry forward to shape a better future of travel.



## amadeus

### What our employees say

*"My adventure started almost 10 years ago as a Software Development Intern. At the time, I knew little about the travel industry, except that I loved to travel. What makes a career at Amadeus really special is the diversity. In every team, you'll find great, committed and fun people from all over the world. I've also had the chance to work in a variety of areas, working in London and Sydney to my current role in Munich."*

Pierre-Luc Noel,  
Service Reliability Engineer - Section Manager, Germany

*"It's thrilling to work at Amadeus. There are so many exciting projects to work on, so many interesting people meet. You're constantly learning."*

Celine Giorla,  
Disruption Tribe Leader R&D, France

*"It's wonderful to work for Amadeus. I'm an avid traveller, so interacting with people all over the globe and working in a domain that's so close to my heart is really rewarding"*

Garima Jain,  
Associate Product Manager, India

*"People, because I'm constantly surrounded by talented people from all around the world with fantastic backgrounds and stories. Trust because every leader I've worked with has given me opportunities to make a difference and contribute to critical projects from Day 1."*

Antoine Ligier,  
Air Content Sourcing Strategy Management, USA

*"I work with start-ups on a daily basis, so I get exposed to many unique and innovative ideas. It's always fun and challenging to figure out how Amadeus and start-ups can work together"*

Kawisara Wattanapong,  
Program Leader Start-ups, APAC

