

Dear TUM friends and associates,

We find ourselves at a turning point in history, which makes it all the more important that we shape the change we see around us. When I consider the many creative, tenacious, and academically brilliant pioneering spirits that make our TUM such a formidable powerhouse of innovation, it fills me with optimism, pride, and joy. Time and again, our scientists deliver some genuine highlights as they endeavor to understand the world through their research and shape it through their highly practical innovations.

Nanomaterials and nanotools are genuine beacons of hope, opening the door to innovative applications in all manner of different fields. But how will we get the nanorobots of the future to assemble molecules or transport things from A to B? Physicists at TUM are hunting for the interfaces between the nano and macro worlds that are crucial to success, testing out electrical control concepts for nanomolecules. In another project, scientists have managed to build an electric switch out of a single organic molecule – surely a record for the smallest switch that will never be beaten!

Our biotechnologist Thomas Brück, by contrast, is thinking big: His Green Carbon research project is turning algae and yeasts into sustainable raw materials for carbon-fiber composites, dispensing entirely with oil-based materials.

Cordt Zollfrank, meanwhile, is researching ancient adhesives such as birch tar in order to find environmentally friendly alternatives to oil-based epoxy resins. An amateur archaeologist sparked his interest in rediscovering the lost knowledge of old glues and updating this know-how for future applications.

Directing daylight exactly where you want it to go, ensuring effective insulation and ventilation, or acoustic distribution – an architecture research project has set out to combine all of these features into a single custom-made, 3D-printed facade.



If we want to counter the impact of increased global warming, we will need both environmentally sustainable technological innovations and their acceptance in society. Entirely in keeping with our guiding principle of “human-centered engineering”, the BAYSICS research partnership invites citizens to share the driving seat in studying climate change.

Constants provide certainty – and who wouldn’t want that, at times like these? When these constants start wavering, however, things get tricky. Just like the Hubble constant, whose precise value has been fiercely debated among astrophysicists for years. Different approaches for calculating or measuring it have produced different results. Using a new measurement method, TUM physicist Sherry Suyu has now managed to calculate the value of the Hubble constant with a very high degree of accuracy. With her outstanding scientific skills and her ability to bring people together, she may even succeed in resolving the experts’ dispute once and for all.

One bona fide constant at TUM is the extraordinary creative energy that distinguishes our highly talented scientists – nothing is more exciting than their high-impact discoveries, inventions, and innovations. I hope that you will also be wowed by our scientists’ enthusiasm as you read this issue of Faszination Forschung.

Yours,

Thomas F. Hofmann
President