

50 Years of Biochemistry at TU Graz

In September 2023, biochemistry at TU Graz will celebrate its 50th anniversary. Biochemistry, or the “chemistry of life”, deals with the interaction of biological and chemical processes in living organisms.

For 50 years now, topics such as molecular biology, cell biology, structural biology or enzymology have been on the agenda of the Institute of Biochemistry. And in particular in Horst Lechner’s Young Researcher Group of BioTechMed-Graz, which started in April. The research group focuses on the computer-aided design of enzymes, specifically proteases, which have the ability to cut other proteins at a specific site. Or in the research group led by Gustav Oberdorfer, which has focused on the computer-aided design of high-quality proteins with specific properties. ■

■ **More information on the research areas and projects can be found on the Institute’s website**

New Method for Monitoring Fuel Cell Ageing

Researchers at TU Graz have developed a new method to monitor the ageing of polymer electrolyte fuel cells and electrolyzers. An eFLUORiX measuring device is used for this.

The fluoride emission rate is an important indicator that provides information about the health of a polymer electrolyte membrane in a fuel cell or in electrolysis. It is determined by measuring the amount of fluoride ions in the water produced at the fuel cell’s cathode or anode outlet using spectroscopic photometry. Photometers traditionally use optical filters.

However, the new eFLUORiX measuring instrument used at the Institute of Chemical Engineering and Environmental Technology at TU Graz uses an optical transmission spectrograph that can quantify readings much more sensitively, and measurement and calibration software that can analyse fluoride ions in detail, even in the smallest sample quantities. This makes sample preparation enormously easier.

In the tests with different measurement methods, an average difference of $\pm 0.13 \text{ nmol h}^{-1} \text{ cm}^{-2}$ was achieved, which indicates a very good agreement and thus a good success of the new method. These new findings suggest that photometric detection of fluoride ions is a fast and easy-to-use method to detect membrane degradation. ■

Lunghammer – TU Graz, Illustration: Belkin & Co – Fotolia.com

TU Graz Science Day – New Worlds of Production

On 27th September, science and business will discuss new worlds of production at TU Graz. How will we produce things in the future? What role can artificial intelligence and machine learning play in the factory of the future? And how can we produce things in a sustainable, recyclable and resource-saving way?

The keynote speech of the day will be given by Matthias Weigold, production expert at TU Darmstadt. The researcher is primarily concerned with how ongoing data collection and in-depth data analysis reveal opportunities for optimisation. The goal is flexible, energy-efficient production that makes the factory fit for the future.

The TU Graz internal keynote will be given by Merit Bodner, tenured professor at the Institute of Chemical Engineering and Environmental Technology and expert on fuel cell ageing. It deals with the options for making hydrogen technologies free of substances of concern and finding equivalent alternatives.

In the afternoon, different thematic sessions will take a deep look into the topic of production from a variety of scientific perspectives. ■

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■ **All information about the TU Graz Science Day can be found online at www.tugraz.at/go/science-for-future**