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With a Love for Chemistry against the “Zeitgeist” (Social Climate) - Rostock Chemist Supports BBAW Initiative at Schools in Brandenburg

It is probably the most amazing catalytic reaction in nature that Prof. Dr. Matthias Beller uses thought experiments to explain to his young audience in the state of Brandenburg: photosynthesis. Plants use carbon dioxide, water and light to produce their "biomass", the basis of life on earth, and oxygen for breathing. In science, people are exploring technologies that replicate this process - for energy supply, among other things. Matthias Beller from the Leibniz Institute for Catalysis in Rostock would like to "convey the fascination" of such topics and of science in general in his lectures at secondary schools in Brandenburg.

Prof. Beller's lectures are part of the "Academy lectures at Brandenburg universities" format. Schools", which is organized by the Berlin-Brandenburg Academy of Sciences and Humanities, BBAW, in cooperation with the Ministry of Education of the State of Brandenburg. The BBAW has been bringing its members and employees together with schools in the state of Brandenburg for almost a quarter of a century. "Young people should also benefit from Berlin's high density of academics in the capital's wide surrounding area," explains Dr. Ute Tintemann from the BBAW. She has been running the project since 2011. "We give eleventh and twelfth graders an insight into the world of science through direct contact with researchers."



Academy lectures at schools in Brandenburg for the first time: Matthias Beller. Photo: Gohlke/LIKAT

The Fascination of Science

Every year, the BBAW asks Academy members and employees about their willingness and the topics. The list then goes to the schools in the country, which choose their topics. 1,500 times, women and men from the world of science came to the Young people. Prof. Beller, Vice President of the Leibniz Association and member of the board at Rostock LIKAT, was asked to join the BBAW for the first time this year. He accepted immediately.

Matthias Beller: "There is hardly a better opportunity to show young people how rewarding and fascinating the study of scientific topics is for our daily lives." And if even one pupil leaves the event with such an insight, a lot has been done for science. Across Germany, the number of students in mathematics and science faculties has fallen dramatically, by 35 percent over the past ten years according to the Federal Statistical Office .¹

Matthias Beller shows a photo from the media library on his cell phone: it shows about ten young people with happy faces and certificates in their hands. "These are all graduates of a natural science subject at the University of Rostock in 2023. Master's and Bachelor's degrees!" German research is slowly running out of motivated young talent. He would also like to make a contribution to counteracting this trend.

Puzzles and Mind Games

Five schools have currently "booked" Matthias Beller's presentation. Four dates have been completed, the fifth will follow on April 7 in Strausberg. The topic is "Artificial Photosynthesis for a sustainable energy supply". Sounds dry. But with puzzles and mind games and a love of his subject, the chemist is able to open up his audience and show young people what the topic has to do with them and their environment.

A widespread way of thinking about nature, for example, is that it always proceeds very efficiently, sparingly and with maximum effect. Matthias Beller likes to guess how much of the solar energy that a plant absorbs for its growth is found in its biomass. "This is usually overestimated. It's only 0.6 percent." And this efficiency drops even more spectacularly when, for example, rapeseed is converted into biodiesel to produce electrical energy in the generator.

Focus on the Opportunities

"We humans can already imitate natural photosynthesis in a much more energy-efficient way," says Prof. Beller. Using photovoltaics, for example, the sun's rays are converted into electricity with 20 percent efficiency. This electricity can be used to convert water into green hydrogen and oxygen. "Artificial photosynthesis technologies use these processes to chemically store renewable energy or produce chemical raw materials."

Among other things, chemist Matthias Beller sees great opportunities for society in these technologies. "I currently get the impression that the focus in our society is on the problems and people hardly see the opportunities." He is trying to go "against this zeitgeist". "There is so much hope, so much creativity and so many committed players."

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¹ <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-ForschungKultur/Bildungsindikatoren/studierende-fachgruppen-tabelle.html>