

AXEL LANGNER

SCIENTIST | CONTENT CREATOR



WORK EXPERIENCE

RESEARCH ASSISTANT

Institute of Chemistry Education, Justus Liebig University Giessen, Germany | since 2021

TEACHER

Clemens-Brentano-Europaschule Lollar (School), Germany | 2018 - 2020

UNDERGRADUATE RESEARCH ASSISTANT

Institute of Chemistry Education, Justus Liebig University Giessen, Germany | 2017 - 2021

RESEARCH ASSISTANT

Bioresources Technology & Engineering GmbH, Germany | 2014

SELF-EMPLOYED

Recreation sport | 2011 - 2018

UNDERGRADUATE RESEARCH ASSISTANT

Institute of Bioprocess Engineering and Pharmaceutical Technology, University of Applied Science Giessen, Germany | 2011 - 2013

PART-TIME JOBS

Gastronomy, logistic, service | 2008 - 2019

EDUCATION

PHD STUDIES

CHEMISTRY EDUCATION RESEARCH

Institute of Chemistry Education, Justus Liebig University Giessen, Germany | since 2021

Using an eye-gaze-augmented retrospective to foster students' problem-solving in Organic Chemistry

FIRST STATE EXAMINATION

HIGH SCHOOL TEACHER DEGREE (CHEMISTRY & BIOLOGY)

Justus Liebig University Giessen, Germany | 2013 - 2020

BACHELOR OF SCIENCE

BIOTECHNOLOGY/BIOPHARMACEUTICAL TECHNOLOGY

University of Applied Science Giessen, Germany | 2009 - 2013

CONTACT

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KNOWLEDGE

Video editing	● ● ● ●
Graphic design	● ● ● ●
Data management	● ● ● ●
Eye-tracking	● ● ● ●
Multimedia learning	● ● ● ●

LANGUAGES

German	● ● ● ●
English	● ● ● ●

SKILLS

Team work	● ● ● ●
Communication	● ● ● ●
Autonomy	● ● ● ●
Networking	● ● ● ●

RESEARCH

USING AN EYE-GAZE-AUGMENTED RETROSPECTIVE

Graulich N., Justus Liebig University Giessen, Germany

REPRESENTATIONAL COMPETENCE IN ORGANIC CHEMISTRY

Bunch Z., Popova M., University of North Carolina Greensboro, USA

DRAWING PROCESSES IN ORGANIC CHEMISTRY

Braun I., Graulich N., Justus Liebig University Giessen, Germany

EYE-TRACKING IN TEACHER EDUCATION

Graulich N., Justus Liebig University Giessen, Germany

CASE COMPARISONS IN ORGANIC CHEMISTRY

Eckhard J., Graulich N., Justus Liebig University Giessen, Germany
Rodemer M., Asmussen G., Bernholt S., Leibniz Institute for Science and Mathematics Education Kiel, Germany

ANTIMICROBIAL PEPTIDES

Müller D., Bioresources Technology & Engineering GmbH
Hemberger J., University of Applied Science Giessen, Germany

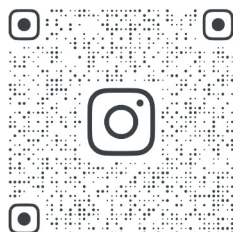
BIOCONVERSION OF LIGNOCELLULOSE

Busse N., Czermak P., University of Applied Science Giessen, Germany
Rühl M., Justus Liebig University Giessen, Germany

FUNDING

SCIENCE COMMUNICATION PROJECT *WISSEN/SCHAF(F)T*

Justus Liebig University Giessen, Germany



TEACHING

PRACTICAL LABORATORY COURSES IN CHEMISTRY EDUCATION

Justus Liebig University Giessen, Germany

IN-DEPTH COURSE IN CHEMISTRY EDUCATION

Justus Liebig University Giessen, Germany

HIGH SCHOOL TEACHING

Clemens-Brentano-Europaschule Lollar (School), Germany

PRACTICAL LABORATORY COURSE IN PHARMACEUTICAL ANALYSIS

University of Applied Science Giessen, Germany

AWARDS

Poster Award 2024,
Division of Chemistry
Education, German
Chemical Society

Second Place 2024,
Best Debut Video Award,
Fast Forward Science

Dr. Herbert Stolzenberg
Teaching Award 2022,
Justus Liebig University
Giessen, Germany

SCHOLARSHIPS

ESERA Summer School
2022, European Science
Education Research
Association

Scholarship for students,
German Academic
Scholarship Foundation

Conference Travel Grants,
German Academic Exchange
Service (DAAD)

Research fellowship for
doctoral candidates,
German Academic Exchange
Service (DAAD)

ENGAGEMENT

Science Communication
Workshops | since 2024

Representative
for Early-Career
Researchers | 2023 - 2024

Media Literacy
Workshops | 2022 - 2024

PUBLICATIONS

Langner A. Hain I. & Graulich N. [accepted]. Defining Areas of Interest in Organic Chemistry Education Eye Tracking Research. Journal of Chemical Education.

Langner A. & Graulich N. (2024). From sight to insight – reflection processes in an eye-gaze-augmented retrospective. International Journal of Science Education.

Bernholt S., Eckhard J., Rodemer M., Langner A., Asmussen G., Graulich N. (2023). Designing tutorial videos to support students' learning of reaction mechanisms in organic chemistry. In Y. J. Dori, C. Nagi, G. Szteinberg (Eds.) Digital Learning and Teaching in Chemistry: An International and Inclusive Approach: The Royal Society of Chemistry.

Braun I., Langner A. & Graulich N. (2022). Let's draw molecules: Students' sequential drawing processes of resonance structures in organic chemistry. Frontiers in Education.

Langner A., Nied. M. & Graulich N. (2022). Eye-tracking as a promising tool in pre-service teacher education – a new approach to promote skills for digital multimedia design. Journal of Chemical Education.

Eckhard J., Rodemer M., Langner A., Bernholt S. & Graulich N. (2021). Let's frame it differently – analysis of instructors' mechanistic explanations. Chemistry Education Research and Practice.

Graulich, N., Langner, A., Vo, K., & Yuriev, E. (2021). Scaffolding Metacognition and Resource Activation During Problem Solving: A Continuum Perspective. In G. Tsapalis (Ed.), Problems and Problem Solving in Chemistry Education: Analysing Data, Looking for Patterns and Making Deductions (S. 38-67): The Royal Society of Chemistry.

CONFERENCE PROCEEDINGS

Langner A. & Graulich N. (2024). Stimulating Reflection Processes with an Eye-Gaze-Augmented Retrospective in Organic Chemistry. Conference Proceeding ESERA 2023.

Langner A. & Graulich N. (2024). Mit Blick zurück einen Schritt vor: Eine Blickbewegungsgestützte Retrospektive. Conference Proceeding GDGP 2023.

Langner A. & Graulich N. (2023). Lernförderlichkeit multimedialer Inhalte kriteriengeleitet abschätzen. Conference Proceeding DiCE 2023.

Braun I., Langner A. & Graulich N. (2023). Von Struktur zu Struktur: Untersuchung von Zeichenprozessen in der organischen Chemie. Conference Proceeding GDGP 2022

POSTER PRESENTATIONS (SELECTION)

Langner A., Graulich N. (2024). Beim nächsten Mal... Halten sich Studierende an ihre eigenen Vorsätze bei zukünftiger Aufgabenbearbeitung. 40. Jahrestagung der Fachgruppe Chemieunterricht, Regensburg, Germany.

Langner A., Graulich N. (2023). Einflüsse Blickbewegungsgestützter Retrospektiven in der Organik. GDGP Jahrestagung 2022, Aachen, Germany.

Langner A., Graulich N. (2022). How does problem-solving with organic chemistry molecules literally look like? Biennial Conference on Chemistry Education, West Lafayette, USA.

Langner A., Graulich N. (2021). First Steps into Eye-Tracking in Chemical Education Research, Methods in Chemistry Education Research, online.

PRESENTATIONS (SELECTION)

Langner A., Graulich N. (2024). Auf den zweiten Blick. Blickbewegungen zur Förderung von Reflexionen. GDCh Jahrestagung 2024, Bochum, Germany.

Langner A. (2024). How to communicate your research. First steps into science communication. Summer Symposium on Science Education 2024, online.

Langner A. (2023). Eye-Tracking in Chemistry Education and novel ways to use it. North Caroline Chemistry Education Research Division, online.

Langner A., Graulich N. (2023). Stimulating Reflection Processes with an Eye-Gaze-Augmented Retrospective in Organic Chemistry. ESERA 2023, Cappadocia, Turkey.

Langner A., Graulich N. (2022). How have I solved the problem? An eye-gaze augmented retrospective to foster students' comprehension of organic chemical representations. Biennial Conference on Chemical Education 2022, West Lafayette, USA.

Langner A., Nied M., Graulich N. (2022). Multimediales Lernen und Lehren mithilfe von Eye-Tracking erfahren. 38. Fortbildungs- und Vortragstagung der GDCh-Fachgruppe Chemieunterricht, Osnabrück, Germany.

Langner A., Nied M., Graulich N. (2022). Teaching digital multimedia design with eye-tracking. NARST: 2022 Annual International Conference, Vancouver, Canada.

REFERENCES

PROF. DR. NICOLE GRAULICH, HEAD OF DEPARTMENT

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ANDREJ KELLER, HEAD OF SCHOOL

Clemens-Brentano-Europaschule Lollar
Ostendstraße 2
35457 Lollar
Germany
+49 6406 2056 (Administrative Office)
andrej.keller@cbes-lollar.de

TRAINING (SELECTION)

Quick dive into science communication

Science Communication & Social Media

Fake News - What is true and what is fake?

YouTube, TikTok and beyond: Learning and teaching in the tension between formal and informal education

Tobii Pro eye-tracking training

Eye-tracking in education research

A beginner's guide from a research question to a successful eye tracking study

Eye-tracking data analysis using machine learning

Artificial intelligence in higher education

An introduction to natural language processing

Missing data

Introduction to R