

David Gabriel Schauer

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EDUCATION

Columbia University, Chemical Engineering - Gang Lab

NYC, NY, USA

- Fully Funded MS/PhD in Fu Foundation School of Engineering and Applied Science
- Guest Junior Researcher at Center for Functional Nanomaterials (BNL / DOE)

Sep. 2025 - dato

Brown University, Dept. of Chemistry, KLEIN LAB

Providence, RI, USA

Bachelor Thesis: Exploring Nanoscale Phenomena: From Probing Tailored Surface Properties of Gold Nanoparticles to Enhanced Thermal Conductivity in Copper-Carbon Ultraconductors - Link

Mar. 2024 — Jun. 2024

Swiss Federal Institute of Technology (ETH) Zurich - D-CHAB

Zurich, Switzerland

Bachelor of Science in Interdisciplinary Natural Sciences (biochem.-physical direction)
- Nanotechnology, Chemical Physics, Spectroscopy, Materials Science

Sep. 2020 — Feb. 2026

Extraordinary Apprenticeship in Mechatronics - CAP.

Linz, Austria

Final apprenticeship examination with focus on automation engineering

Sep. 2015 — Sep. 2019

Public Benedictine Abbey High School, Humanistic Direction (Classics)

Melk, Austria

Standardized maturity examination in German, English, Mathematics, Latin, History and Political Education, Biology, "Philosophy of Numbers" (Pre-scientific Work)

Sep. 2011 — Jun. 2019

RESEARCH & WORK EXPERIENCE

Columbia University, Chemical Engineering - Teaching Assistant

NYC, NY, USA

ANALYSIS OF CHEM. ENG. PROBLEMS (CHENE3020); Prof. Alexander Urban

Sep. 2025 — May 2026

- Conducting weekly office hours and support in-class instruction (5-6h/week)
- Developing quizzes and grading coding projects, reports, and presentations

PRIN-CHEM ENGIN-THERMODYNAMICS (CHEEE3010); Prof. Mijo Simunovic

- Conducting weekly office hours and support in-class instruction (2-3h/week)
- Developing and grading problem sets, homework assignments, and midterms

ETH Zurich, D-CHAB, LPC, ATTO GROUP - Scientific Staff

Zurich, Switzerland

Focus: Tunable synthesis, surface functionalization, and optical/X-ray spectroscopic and microscopic investigation of plasmon resonance of (an)isotropic gold nanoparticles

Sep. 2022 — Sep. 2025

- Led wet-chemistry laboratory under Prof. Wörner
- Ensured chemical safety, proper disposal and hazard management
- Conducted pH-driven seed-mediated synthesis for precise tuning of plasmon response
- Experimented with various microscopic and spectroscopic techniques
- **Promoted** to "Honorary Doctorate" (Aug. 2024)

Hitachi Energy, Central European Research Center - Intern

Baden-Dättwil, Switzerland

Project: Semiconductor power-module packaging and reliability engineering

Sep. 2024 — Apr. 2025

- Tested encapsulated power modules for enhanced SiC-MOSFET semiconductors
- Performed scanning acoustic microscopy and optical surface profilometry
- Managed hot storage, thermal shock cycling and highly accelerated stress tests
- Participated in workshop about power electronics packaging - (ECPE)

Brown University, Dept. of Chemistry, KLEIN LAB - Visiting Scholar

Providence, RI, USA

Focus: Synthesis and surface-sensitive spectroscopy of plasmonic nanoparticles

Sep. 2023 — Jun. 2024

- Built up chemistry and spectroscopy laboratory with Prof. Sprague-Klein
- Facilitated plasmonic nanoparticle synthesis and targeted surface modification
- Performed surface-sensitive spectroscopy and electron microscopy

Brookhaven National Laboratory, NSLS-II, 3-ID HXN - Guest User

Upton, NY, USA

Project 1 (PI): XAS on surface plasmon resonance of (an)isotropic gold nanoparticles

Sep. 2023 — Sep. 2024

- Conducted sample preparation, data recording, analysis, and curation
- Analyzed Au L₃-edge of gold nanoparticles on Si-wafers through 2D-XANES

Project 2 (Co-PI): Structural characterization of novel copper-carbon ultraconductors

- Performed sample preparation, data recording, analysis, and curation
- Recorded 2D-XANES of Cu K-edge of enhanced thermal conductivity in covetics
- Adjusted temperature (20-200 °C) under in-situ He/vacuum conditions

Paul Scherrer Institute, SwissFEL, Maloja - Guest User

Villigen, Switzerland

Project: X-ray-pump/probe of Vortex Electron Scattering in 3-pyrrolidinol
- (Dis)assembled vacuum chamber, manipulator, and liquid delivery system

Jun. 2023

ETH Zurich, D-CHAB, LPC - Teaching Assistant

Zurich, Switzerland

Praktikum General Chemistry — Physical Chemistry; Dr. Erich C. Meister
- Supervised an experimental laboratory for freshmen students
- Prepared experiments, gave theoretical lectures, and graded reports

Sep. 2022 — Dec. 2022

ETH Zurich, D-CHAB, LPC, ATTO GROUP - Undergraduate Researcher

Zurich, Switzerland

Title: Synthesis and Tailoring of Gold Nanorods and Gold Nanospheres - Link

Jan. 2022 — Sep. 2022

- Set up and responsible for new wet-chemistry laboratory under Prof. Wörner
- Investigated drop-casted gold nanoparticle systems using field-resolved metrology
- Performed centrifugation, spin-coating onto Si₃N₄ membranes, liquid jet delivery
- Conducted scanning/transmission electron microscopy, optical & X-ray spectroscopy

Primetals Technologies - Technical Intern

Linz, Austria

Focus: Measuring devices for metal casting molds - Dept. Mechatronic Products

Jul. 2018

- Assembled and researched automatic thermocouple checkers for failure detection

DOKA GmbH - Technical Intern

Amstetten, Austria

Focus: Heavy-duty structural metal beams and scaffolding

Jul. 2017

- Operated welding robots and pre-sealing parts, and supported metal production

PUBLICATIONS

Failure Evolution and Reliability Assessment of Epoxy Mold Compounds in Power Module Encapsulation.

Y. Zhao, J. Schuderer, F. Vicent-Dalcamin, R. Soleimanzadeh, S. Wirths, **D. G. Schauer**, R. Paul, J. Y. Loisy
Power Conversion and Intelligent Motion (PCIM) Conference (Nuremberg), **6 - 8 May 2025**, 1209-1216; DOI

Targeted Synthesis of Gold Nanorods and Characterization of their Tailored Surface Properties using Optical and X-ray Spectroscopy.

D. G. Schauer, J. Bredehoeft, U. Yunusa, A. Pattammattel, H. J. Wörner, E. A. Sprague-Klein
PCCP (RSC), **2024**, 26(39), 25581-25589; PCCP 2023 Emerging Investigators; DOI

Plasmon Resonance Dynamics and Enhancements Effects in tris(2,2'-bipyridine)ruthenium(II) Gold Nanosphere Oligomers.

U. Yunusa, N. Warren, **D. G. Schauer**, P. Srivastava, E. A. Sprague-Klein
Nanoscale (RSC), **2024**, 16(11), 5601-5612; Nanoscale 2024 Emerging Investigators; DOI

AWARDS

Swiss-European Mobility Program — SEMP

Exchange

ETH Zurich — Brown University; Financial support: 2000 CHF

Mar. 2024 — Jun. 2024

ETH Career Seed Grant

ATTO GROUP, ETH Zurich

Title: Ultrafast dynamics in plasmonic nanostructures

Aug. 2022 — Dec. 2022

- Dr. Zimin (applicant, budget manager), Prof. Hans Jakob Wörner (Budget Officer)
- Financial Support: 6000 CHF

CONFERENCES & PRESENTATIONS

APS Global Physics Summit, **2025** Anaheim, CA, USA - **Talk, Poster Presentation, Abstracts**

Talk: Plasmon Resonance Dynamics of Surface-Modified Gold Nanoparticles Explored Through Optical and X-ray Spectroscopy. **D. G. Schauer**, U. Yunusa, J. Bredehoeft, A. Pattammattel, H. J. Wörner, E. Sprague-Klein

Poster: Probing Nanostructures at Brookhaven: From Electron Dynamics of Functionalized Gold Nanorods to Enhanced Thermal Conductivity in Novel Ultraconductors. **D. G. Schauer**, U. Yunusa, A. Pattammattel, J. Bredehoeft, N. Warren, H. J. Wörner, E. A. Sprague-Klein

Gordon Research Conference - Electron Donor-Acceptor Interactions, **2024**, Newport, RI, USA - **Abstract**
Plasmonic-Molecular Catalyst Hybrid Systems for Enhanced Photochemistry.

U. Yunusa, N. Warren, **D. G. Schauer**, P. Srivastava, Y. Yun, A. Willemsen, E. A. Sprague-Klein

NSLS-II & CFN Users' Meeting, **2024**, Brookhaven National Lab, NY, USA - **Poster Presentation**

Exploring Nanoscale Phenomena at 3-ID HXN: From Enhanced Thermal Conductivity in Copper-Carbon Materials to Probing Tailored Surface Properties of Gold Nanorods.

D. G. Schauer, A. Pattammattel, J. Bredehoeft, U. Yunusa, H. J. Wörner, E. A. Sprague-Klein

Brown University's Inaugural National Labs Day, **2024**, Providence, RI, USA - **Poster Presentations**

Poster 1: Targeted Synthesis of Gold Nanorods and Characterization of Tailored Surface Properties using Optical and X-ray Spectroscopy. **D. G. Schauer**, U. Yunusa, J. Bredehoeft, A. Pattammattel, H. J. Wörner, E. Sprague-Klein
Poster 2: Nanomaterial Applications in Green Energy. N. Warren, U. Yunusa, E. Donahue, P. Srivastava, **D. G. Schauer**, E. A. Sprague-Klein

28th International Conference on Raman Spectroscopy (ICORS), **2024**, Rome, Italy - **Abstract**

Spectroscopic Techniques for Characterization of Clean Energy Based Nanomaterials.

N. Warren, P. Srivastava, U. Yunusa, E. Donahue, **D. G. Schauer**, E. A. Sprague-Klein

Brown University Graduate Student Poster Session, **2023**, Providence, RI, USA - **Poster Presentations**

Poster 1: Targeted Synthesis and Tailoring of Gold Nanorods and Gold Nanospheres. **D. G. Schauer**, J. Bredehoeft, E. A. Sprague-Klein, H. J. Wörner

Poster 2: Excited-State Reactions in Confined Plasmonic Nanostructures and Soft Nanomaterials. N. Warren, U. Yunusa, **D. G. Schauer**, Z. Gong, E. A. Sprague-Klein

8th Nanotech France Int. Conference, **2023**, Paris, France - **Poster Presentation, Abstract**

Targeted Synthesis and Tailoring of Gold Nanorods and Gold Nanospheres.

D. G. Schauer, J. Bredehoeft, H. J. Wörner

7th Nanotech France Int. Conference, **2022**, Paris, France - **Poster Presentation, Abstract**

Synthesis of Gold Nanoparticles and Field-resolved Metrology for the Investigation of Anisotropic Localized Surface Plasmons.

D. G. Schauer, D. Zimin, J. Bredehoeft, H. J. Wörner

RELEVANT SKILLS

Languages: German (native), English (full professional proficiency), Latin (major latinum), Ancient Greek (graecum)

Programming & Software: MatLab, LaTeX, Python (Anaconda, JupyterLab, xraylarch, XMIDAS, Athena, matplotlib, numpy), R (RStudio), UNIX, OriginLab, WITEC Project FIVE, Adobe Illustrator, COMSOL Multiphysics, Autodesk Inventor

Chemistry & Physics Laboratory: Advanced organic/inorganic synthesis, quantum optics and laser operations, synthesis and surface modification of plasmonic metal nanoparticles, standard cleanroom operations

Spectroscopy & Characterization: Transmission & scanning electron microscopy (TEM, SEM), UV/Vis/NIR absorption spectroscopy, Fourier-transform infrared spectroscopy, surface-enhanced Raman spectroscopy, X-ray absorption spectroscopy, X-ray fluorescence nano-imaging, dynamic light scattering, scanning acoustic microscopy, optical surface profilometry, optical light and fluorescence microscopy, differential scanning calorimetry

Mechatronics — CAP.: Mechanical and electrical engineering, electronics, pneumatics, hydraulics, open- and closed-loop control, automation engineering, signal processing, electric circuits, industrial robotics (ABB, KUKA), inert-gas and electric welding, sintering, soldering, 3D printing

WORKSHOPS & CERTIFICATES

High Resolution Transmission Electron Microscopy - HRTEM

ScopeM, ETHZ, Switzerland

- Fundamentals of HR(S)TEM imaging and aberration correction
- HR(S)TEM simulations and phase restoration methods

July 2025

Quantum Device Design Workshop: Superconducting Qubits

UCLA, CA, USA (Remote)

Beginner Track - Designing quantum devices (foundation, theory, design)

May 2025

- Review on classical LC circuits, resonance, and transmission lines
- Circuit quantization, the Josephson junction, and transmon qubits
- Modules: Qiskit Metal, PyEPR, SQDMetal, AWS Palace

Transmission Electron Microscopy Fundamentals - TEM I

ScopeM, ETHZ, Switzerland

- Basics of electron optics and the TEM instrument set-up
- TEM imaging modes and image contrast
- Hands-on training for sample preparation and various TEM operations

May 2025

NSLS-II & CFN Workshop at Brookhaven National Laboratory

Upton, NY, USA

- Opportunities in Soft and Nanoparticle-based Chiral Materials for Light harvesting, Sensing and Information Processing
- Exploring Magnetic 2D Systems: Synergies across NSLS-II & CFN
- New Soft X-ray Nanoscale Imaging & Spectromicroscopy Capabilities at NSLS-II
- Advanced Electron Microscopy for Functional Nanomaterials

May 2024

Light Microscopy Fundamentals - LM 1

- Basics of light microscopy and device set-up
- Transmission, wide-field fluorescence, deconvolution and confocal imaging

ScopeM, ETHZ, Switzerland

May 2023

EXTRACURRICULAR ACTIVITIES, VOLUNTEERING & ASSOCIATIONS

Malaika Kitchens — Fueling Health, Education, and Communities

Ambassador — responsible for outreach and funding acquisition in the US

Interested in learning more or getting involved — david.schauer@malaikakitchens.com

Kirinyaga, Kenya

July. 2024 — dato

Rotary Club of New York #6

Member in good standing; Website NY-Rotary

New York City, NY, USA

June 2025 — dato

Penn Club of New York / Columbia University Club of New York

Member in good standing; Websites: PCNY, CUCNY

New York City, NY, USA

March 2025 — dato

Melody Factory, — Foundation for Youth and Music

Ambassador — responsible for communication, outreach, and funding acquisition

Weggis, Switzerland

Nov. 2024 — Nov. 25

Brown University Club of New York

Member in good standing; Website: BUCNY

New York City, NY, USA

May 2024 — dato

Association of Chemistry Students at ETH Zurich (VCS)

Board positions: Vice President, Head of Industrial Relations, Transcript Writer

Zurich, Switzerland

Sep. 2020 — Mar. 2023

Austrian Red Cross (Civil Service)

Board examination for a paramedic and emergency vehicle driver

Ybbs/Donau, Austria

Oct. 2019 — Jun. 2020

LEISURE ACTIVITIES & INTERESTS

Sports: Rowing (Belvoir Rowing Club Zurich), soccer, skiing & ski touring, tennis, weightlifting, ice hockey

Other: Piano, ukulele, escape rooms, ancient philosophy

REFERENCES

Prof. Dr. Oleg Gang — Full Professor of ChemE./Appl. Phys./Mat. Sc. @ Columbia Univ.

Gang Lab, Dept. of Chem. Eng., Fu Found. School of Eng. and Appl. Sc., Columbia University, New York, NY, US

Email: og2226@columbia.edu; Phone: +1 (212) 854 1095; Website: Gang Lab

Prof. Dr. Hans Jakob Wörner — Full Professor at D-CHAB, Head of LPC @ ETH Zurich

Ultrafast Spectroscopy and Attosecond Science, LPC, D-CHAB, ETH Zurich, Zurich, Switzerland

Email: hansjakob.woerner@phys.chem.ethz.ch; Phone: +41 44 633 44 12; Website: ATTO Group

Prof. Dr. Emily A. Sprague-Klein — Assistant Professor of Chemistry @ Brown University

Klein Lab, Dept. of Chemistry, Brown University, Providence, RI, USA

Email: emily_sprague-klein@brown.edu; Phone: +1 (401) 863-3586; Website: KLEIN Lab

Dr. Ajith Pattammattel — HXN Beamline Scientist @ Brookhaven National Laboratory

3-ID HXN beamline, National Synchrotron Light Source II, BNL, Upton, NY, USA

Email: pattammattel@bnl.gov; Phone: +1 (631) 344-6082; Website: HXN - PATTAMMATTEL

Dr. Yanfei Zhao — Scientist (Project Leader) @ Hitachi Energy

PG, Central European Hitachi Energy Research Center, Baden-Dättwil, Aargau, Switzerland

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Mag. Gabriele Egger — Program Director @ Cap. (part of TGW FUTURE WINGS)

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