Curriculum Vitae – Ayush Agarwal

Date of Birth	August 9, 1993
Place of Birth	Kolkata, West Bengal, India
Nationality	Indian
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Biographical Statement:

Chemical Engineer with a PhD in Energy, and a global career spanning India, Sweden, the USA, and Switzerland. Experienced in chemical process technologies across laboratory, pilot, and industrial scales, with hands-on expertise in advanced spectrometric techniques. Skilled in developing and optimizing analytical methods for quantifying trace gas compounds (siloxanes and condensable sulfur compounds) and nanoparticles, with applications in environmental diagnostics and sustainable technologies. Experienced in interdisciplinary collaboration, sample preparation, method validation, and high-throughput analytical workflows. A first-generation academic, passionate about the circular economy and greenhouse gas mitigation.

Education:

Doctor of Sciences (PhD), Energy — Feb 2020 – Sep 2025
École Polytechnique Fédérale de Lausanne (EPFL), Switzerland
Thesis: Hyphenated elemental analysis methods for characterizing trace gas compounds and nano-objects for energy and environmental applications
Supervisor: Prof. Dr. Christian Ludwig

Master of Science (MSc), Chemical Science and Engineering — Aug 2017 – Nov 2019
KTH Royal Institute of Technology, Sweden
Thesis: Experimental study of high-pressure fluidized bed gasification of biomass at pilot scale: A proof of concept
Supervisor: Prof. Dr. Klas Engvall

Bachelor of Engineering (BE Hons.), Chemical Engineering — Aug 2011 – Jul 2015
Birla Institute of Technology & Science, India
Thesis: Experimental Investigation on Performance Analysis of Storage Batteries
Supervisor: Prof. Dr. Sampatrao Dagu Manjare

Publications [†Authors with equal contributions; *Corresponding Author]:

1. Samuel Gatti, **Ayush Agarwal**, Laura Torrent, Albert Schuler, Sigita Trabesinger, Andrea Testino *Origin and Mechanisms of Alkali-Metal Loss in High-Temperature Synthesis of Rechargeable Battery Layered Oxide Cathodes* Materials Today Energy (ref: MTENER-D-25-01498)
2. **Ayush Agarwal**†*, Laura Torrent†, Julian Indlekofer, Sylvain Bouchet, Lucy P. Culleton, Serge M.A. Biollaz, Christian Ludwig *Sampling to Analysis: Simultaneous Quantification of Siloxanes and Sulfur Compounds in Biogas for Cleaner Energy* Progress in Energy (ref: PRGE-100356.R1)
3. **Ayush Agarwal***, *Liquid quench sampling to improve biogas quality* Nature Reviews Clean Technology, 2025, https://doi.org/10.1038/s44359-025-00092-8
4. Enio Zanchetta, Manon Ollivier, Nicolas Taing, Eya Damergi, **Ayush Agarwal**, Christian Ludwig, Horst Pick *Abiotic stress approaches for enhancing cellulose and chitin production in Chlorella vulgaris* International Journal of Biological Macromolecules, 2025, https://doi.org/10.1016/j.ijbiomac.2025.142969
5. **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Hossein Madi, Lucy P. Culleton, Serge M.A. Biollaz, Christian Ludwig *From proof to practice – Sampling and analysis for simplified quantification of siloxanes in biogas* Bioresource Technology, 2025, https://doi.org/10.1016/j.biortech.2025.132463
6. Agata Szczeszak†, **Ayush Agarwal**†, Laura Torrent, Albert J. Schuler, Tomasz Grzyb, Dominika Przybylska, Christian Ludwig, Ajay B. Patil *Recycling rare earth metals from fibers used in security papers* Resources, Conservation & Recycling Advances, 2025, https://doi.org/10.1016/j.rcradv.2025.200251
7. Cedric David Koolen, Jack Kirk Pedersen, Bernardus Zijlstra, Maximilian Winzely, Jie Zhang, Tobias V. Pfeiffer, Wilbert Vrijburg, Mo Li, **Ayush Agarwal**, Zohreh Akbari, Yasemen Kuddusi, Juan Herranz, Olga V. Safonova, Andreas Schmidt-Ott, Wen Luo, Andreas Zuettel *Scalable synthesis of Cu(-Ag) oxide clusters via spark ablation for the highly selective electrochemical conversion of CO2 to acetaldehyde* Nature Synthesis, 2025, https://doi.org/10.1038/s44160-024-00705-3
8. Christopher Hunston, David Baudouin, Leo Koning, **Ayush Agarwal**, Oliver Kröcher, Frédéric Vogel *Particle size effects in Ru/CNF catalysts during supercritical water gasification of glycerol* Applied Catalysis B: Environmental, 2023, https://doi.org/10.1016/j.apcatb.2022.121956
9. Cedric David Koolen, Laura Torrent, **Ayush Agarwal**, Olga Meili-Borovinskaya, Natalia Gasilova, Mo Li, Wen Luo, Andreas Züttel *High-Throughput Sizing, Counting, and Elemental Analysis of Anisotropic Multimetallic Nanoparticles with Single-Particle Inductively Coupled Plasma Mass Spectrometry* ACS Nano, 2022, https://doi.org/10.1021/acsnano.2c01840
10. Steffen Garbe, Jonas Futter, **Ayush Agarwal**, Mohamed Tarik, Adrian A Mularczyk, Thomas J Schmidt, Lorenz Gubler *Understanding degradation effects of elevated temperature operating conditions in polymer electrolyte water electrolyzers* Journal of The Electrochemical Society, 2021, https://doi.org/10.1149/1945-7111/abf4ae

Conferences:

1. [Invited Talk, Oral] 50th World Chemistry Congress of IUPAC, Jul 14-19, 2025, Kuala Lumpur, Malaysia
   - [Invited Talk] Title: *Process Safety Across the Chemical Engineering Curriculum* Author: **Ayush Agarwal**
   - [Oral] Title: *Bridging analytical methods and practical solutions: Accurate quantification of siloxanes and sulphur in biogas*
     Authors: **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Sylvain Bouchet, Lucy P. Culleton, Serge M.A. Biollaz, Christian Ludwig
2. [Oral, Poster] 9th CHanalysis 2025, Mar 19-20, 2025, Beatenberg, Switzerland
   - [Oral] Title: *Optimized Sampling to Detection: Simultaneous Analysis of Siloxanes and Sulfur in Biogas*
     Authors: **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Sylvain Bouchet, Lucy P. Culleton, Serge M.A. Biollaz, Christian Ludwig
   - [Poster] Title: *High-Throughput Tools for Nanomaterials: Size-Resolved Elemental Analysis of Multimetallic Nanoparticles*
     Authors: **Ayush Agarwal**, Laura Torrent, Cedric Koolen, Kenneth Crossley, Samuel Gatti, **Ekta Verma, Sara E.** Skrabalak, Andreas Züttel, Christian Ludwig
3. [Oral, Session Co-Chair] 20th European Winter Conference on Plasma Spectrochemistry (EWCPS 2025), Mar 2-7, 2025, Berlin, Germany
   Title: *Unlocking Nanoparticle Composition: High Throughput, Size-Resolved Analysis with SMPS-ICP-MS*
   Authors: **Ayush Agarwal**, Laura Torrent, Cedric David Koolen, Kenneth Crossley, Samuel Gatti, Andreas Züttel, Christian Ludwig
4. [Oral] Swiss Snow Symposium 2025, Jan 16-18, 2025, Saas-Almagell, Switzerland
   Title: *Tackling the Challenges of Quantifying Trace Contaminants in Biogas*
   Authors: **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Sylvain Bouchet, Lucy P. Culleton, Serge M.A. Biollaz, Christian Ludwig
5. [Invited Talk] ACS Spring 2024, Mar 17-21, 2024, New Orleans, USA
   Title: *Accelerating Nanoparticle Characterization: High Throughput Size Resolved Elemental Analysis using SMPS-ICP-MS*
   Authors: **Ayush Agarwal**, Laura Torrent, Cedric David Koolen, Andreas Züttel, Christian Ludwig
6. [Oral, Session Presider] Pittcon 2024, Feb 24-28, 2024, San Diego, USA
   Title: *High throughput size resolved elemental analysis of nanoparticles using a hyphenated scanning mobility particle sizer and inductively coupled plasma mass spectrometer (SMPS-ICPMS) setup*
   Authors: **Ayush Agarwal**, Laura Torrent, Cedric David Koolen, Andreas Züttel, Christian Ludwig

7. [Oral] Euroanalysis XXI, Aug 27-31, 2023, Geneva, Switzerland
   Title: *Characterizing nanoparticles: Determining size distribution and elemental composition simultaneously, using SMPS-ICPMS*
   Authors: **Ayush Agarwal**, Laura Torrent, Cedric David Koolen, Andreas Züttel, Christian Ludwig
8. [Oral] ACS Fall 2023, Aug 13-17, 2023, San Francisco, USA
   Title: *Simultaneously quantifying siloxanes and sulfur compounds in biogas for improved energy use of biomass*
   Authors: **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Serge M.A. Biollaz, Christian Ludwig
9. [Poster] 26th ETH Nanoparticles Conference, Jun 20-22, 2023, Zurich, Switzerland
   Title: *Size resolved elemental analysis of bimetallic nanoparticles using SMPS-ICP-MS*
   Authors: **Ayush Agarwal**, Laura Torrent, Cedric David Koolen, Andreas Züttel, Christian Ludwig
10. [Poster] Swiss Nano Convention 2023, Jun 15-16, 2023, Neuchâtel, Switzerland
    Title: *Characterizing multi-metallic anisotropic nanoparticles using SMPS-ICP-MS*
    Authors: **Ayush Agarwal**, Laura Torrent, Cedric David Koolen, Andreas Züttel, Christian Ludwig
11. [Poster] 31st European Biomass Conference & Exhibition, Jun 5-8, 2023, Bologna, Italy
    Title: *Biogas diagnostics: Quantifying siloxanes and sulfur compounds for improving energy use of biomass*
    Authors: **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Serge M.A. Biollaz, Christian Ludwig
12. [Oral] 5th Doctoral Colloquium Bioenergy, Sep 13-14, 2022, Leipzig, Germany
    Title: *Validation of Liquid Quench System in Combination with GC-ICP-MS for Measuring Siloxanes in Biogas and its Future Perspectives*
    Authors: **Ayush Agarwal**, Laura Torrent, Julian Indlekofer, Serge M.A. Biollaz, Christian Ludwig

Work Experience:

1. Doctoral Assistant, Paul Scherrer Institute & École Polytechnique Fédérale de Lausanne, Switzerland Feb 2020 – Mar 2025

- Conducted advanced research in analytical chemistry, developing and validating methods for micro-pollutant analysis and nanoparticle characterization in energy and environmental applications, through designing experiments, analyzing complex datasets, and contributing to peer-reviewed publications and conference presentations.
- Trained peers in sample preparation for ICP-MS and ICP-OES analysis; assisted in teaching activities by delivering lectures, leading problem-solving sessions, and supporting course assessments.
- Contributed to laboratory operations by providing service analysis for internal and external research projects, aiding in writing grant proposals for research

funding, overseeing chemical inventories, and participating in equipment and chemicals procurement negotiations.

2. Visiting Research Scholar, Fogler Research Group, University of Michigan, Ann Arbor, the United States of America Jun 2018 – Aug 2018
   - Designed and developed Safety Modules, standalone pedagogical tools integrated into core undergraduate chemical engineering courses, to instill a process safety mindset using real-world industrial case studies.
   - Contributed to the SafeChemE website (http://umich.edu/safeche) by creating educational content including Safety Analyses, quantitative problem sets, and interactive Wolfram sliders to explore process parameters and their safety implications.
   - Assisted in designing structured learning activities, such as NFPA Diamond assignments, GHS classification exercises, and BowTie Diagram construction, to help students connect theoretical concepts to practical safety analysis.

3. Engineer, Ultratech Cement Limited, Multiple Locations, India Sep 2015 – May 2017
   - Collaborated with cross-functional teams, including operations, maintenance, safety, and quality control departments, to troubleshoot plant inefficiencies, enhance safety protocols, and optimize workflows, while streamline decision-making, and boost overall operational efficiency across the facilities.
   - Led execution of the "Mapping of Performance Efficiency of Major Process Fans" project (Feb 2016 – Jun 2016), developing a Management Information System (MIS) to benchmark fan performance against design specifications; identified underperforming units, recommended upgrades, and achieved energy savings of 2.68 kWh/ton clinker, resulting in $430,000 in annual cost reductions.
   - Designed and led the induction program for 7,500 new employees under the "Jaypee UltraTech Merger Plan" project (Mar 2017 – May 2017), managing logistics and training schedules, while collaborating with the CHRO to analyze recruitment data, evaluate hiring costs, assess retention strategies, and develop succession plans for long-term organizational growth.

4. Intern, Ultratech Cement Limited, Kovaya, India May 2015 – Jul 2015
   - Analyzed the impact of installing a Reducing Pressure Drop Stick (REPDS) in the Raw Mill Cyclone; subsequent installation resulted in a ~3% increase in collection efficiency and a 24 kW reduction in Raw Mill Fan power consumption.

5. Intern, Exide Industries Limited, Kolkata, India Jul 2014 – Jul 2014
   - Studied manufacturing standards (BS 6290, IS 1652:1991 and IEC 60896-11) and processes for producing positive plates of Planté batteries, gaining insight into battery production and quality control.

6. Intern, Indian Oil Corporation Limited, Mathura, India Jun 2014 – Jun 2014
   - Investigated corrosion types affecting pipelines and equipment in oil and gas infrastructure, classifying and documenting corrosion inhibitors to support maintenance strategies.

7. Intern, Steel Authority of India Limited, Bokaro, India May 2013 – Jul 2013
   - Explored industrial production techniques in iron and steel manufacturing, including the operation of industrial ovens, distillation towers, decanters, and biological wastewater treatment systems in the coke oven and by-product plant.

Teaching Experience:

1. **ENV-500 Solid Waste Engineering** | École Polytechnique Fédérale de Lausanne (EPFL) | Master's Level | 4.0 Credits | Instructor: Prof. Dr. Christian Ludwig | Autumn 2020, 2021, 2022, 2023, 2024
   Delivered lectures and in-class problem-solving exercises on Biological Processes for a class of ~30 students annually; taught an additional chapter on Integrated Solid Waste Management in Autumn 2023; assisted with continuous assessment through pre-project reports, assignments, and post-project reports evaluation, and supported exam development, including the correction and scoring of exams.
2. **KE2070 Transport Phenomena, Advanced Course** | KTH Royal Institute of Technology | Master's Level | 7.5 Credits | Instructor: Prof. Dr. Matthäus Bäbler | Autumn 2019
   Assisted with SEM1 – Assignments (3.8 credits) component of the course and supported students in computer lab sessions by guiding them through COMSOL Multiphysics exercises on mass transfer, heat transfer, and fluid flow simulations; co-evaluated final presentations, providing feedback on technical accuracy and communication skills.
3. **KE1170 Transport Phenomena** | KTH Royal Institute of Technology | Bachelor's Level | 7.0 Credits | Instructor: Prof. Dr. Matthäus Bäbler | Spring 2019
   Assisted with the LAB1 - Laboratory Assignment (1.5 credits) component by designing experiments on momentum, energy, and mass transport phenomena, conducted test runs and verified results to ensure experiment reliability before the beginning of the course, enhancing practical learning for undergraduate students in chemical engineering.
4. **BITS F468 New Venture Creation** | Birla Institute of Technology & Science | Bachelor's Level | 3.0 Credits | Instructor: Prof. Dr. Mridula Goel | Autumn 2014
   Supported a cross-campus, online course by coordinating between participants, faculty, and guest lecturers (entrepreneurs, venture capitalists, and industry experts), managing logistics and mailing lists, and assisting students during hands-on sessions, workshops, and pitch-deck presentations to develop their startup ideas from concept to execution, culminating in pitches to VCs and Spark Angels for funding opportunities.

Awards and Honors:

1. 2025 International Atomic Spectroscopy Association Student Award, to be conferred at SciX 2025, Oct 2025, Covington, USA.
2. Chemistry Travel Award 2025, Swiss Academy of Sciences (SCNAT) & Swiss Chemical Society (SCS), for presenting at IUPAC's 50th World Chemistry Congress (50WCC), Jul 2025, Kuala Lumpur, Malaysia
3. Best Student Oral Presentation Award, 9th CHanalysis, Mar 2025, Beatenberg, Switzerland.
4. Top 50 Emerging Scientist, ACS LEADS Conference, Nov 2024, Washington, D.C., USA.

5. ACS Graduate Student Symposium Planning Committee (GSSPC) Travel Award, ACS Spring 2024, Mar 2024, New Orleans, USA.
6. Swiss Group for Mass Spectrometry (SGMS) Student Travel Award, for presenting at Pittcon 2024, Feb 2024, San Diego, USA.
7. ACS DEI&R Travel Award, ACS Fall 2023, Aug 2023, San Francisco, USA.
8. Best Poster Award – 2nd Prize, 26th ETH Nanoparticles Conference, Jun 2023, Zurich, Switzerland.

Professional Services and Leadership:

1. Treasurer, International Young Chemists' Network (IYCN) Aug 2023 – Present
   Elected for two consecutive terms (2023-24, 2024-25) as Treasurer and Titular Member, managing IYCN's financial operations, overseeing budgets, organizing accounts, and supporting executive board decisions to advance global chemistry initiatives.
2. Multiple Roles, YoungSCS Aug 2023 – Present
   Represented Switzerland as one of two IYCN delegates at the 52nd IUPAC General Assembly 2023, served as PSI Representative to ySCS (2023-24), and actively contributed to the Academia and Science Communication subgroups, fostering connections among young researchers.
3. Official Tour Guide, PSI Visitor Center Jan 2023 – Apr 2025
   Served as an English-speaking tour guide, primarily showcasing the Energy System Integration (ESI) platform and delivered engaging tours to visitors from industry, academia, and politics, fostering public understanding and appreciation of PSI's cutting-edge research in energy and materials science.
4. Alumni Mentor, KTH Royal Institute of Technology Oct 2021 – Present
   Serving as an alumni mentor for the KTH Alumni Mentor Program every year since 2021-22 edition, actively guiding student mentees by sharing professional and life experiences, providing career advice, and preparing them for working life, significantly impacting their development.
5. Leadership Roles, PhD and PostDoc Association (PPA), PSI Feb 2020 – Jun 2024
   Held key positions including Head of Communications (May 2021 – Jun 2024), Treasurer (May 2021 – Nov 2021), and Vice President (Nov 2021 – Nov 2022), driving impactful initiatives such as securing formal PPA representation at PSI Welcome Days, personally delivering monthly presentations to engage new employees, shaping the institute's social media policy, managing newsletters and mailing lists, and overseeing budgets with precision; initiated the popular "Non-linear Career Paths" event, now an annual fixture, where PSI employees share diverse career journeys; served as a jury member for the PSI Diversity Award (2022), a biennial recognition for leaders who foster inclusivity across the institute.

6. Peer Reviewer and Judge, Scientific Contributions

   Journals: Evaluated over 15 manuscripts for publications including *ACS Omega*, *Applied Energy*, *Bioresource Technology*, *International Journal of Biological Macromolecules*, *Renewable & Sustainable Energy Reviews*, and *Chemical Engineering Journal*.

   Conferences: Served as Scientific Committee Member and Abstract Reviewer for the European Biomass Conference & Exhibition (EUBCE) (2024 and 2025); served as Session Presider at Pittcon 2024 and co-chaired sessions at EWCPS 2025, managing discussions to facilitate impactful scientific exchanges.

   International Competitions: Participated as Judge at the 2024 iGEM Grand Jamboree (23–26 October), evaluating synthetic biology projects and providing expert feedback on innovation and global impact.

Student Leadership and Engagement:

1. Student Representative, Doctoral Program in Energy (EDEY) May 2021 – Jun2023
   École Polytechnique Fédérale de Lausanne

   Elected as the primary liaison between the EDEY Doctoral Program, Doctoral School, and PhD students, actively participating in program committee meetings, doctoral commission (Cdoct) meetings, and biannual Doctoral School direction meetings; facilitated communication, organized events, suggested courses, and advocated for student needs during a 2-year mandate.
2. Representation Coordinator, PolyDoc Dec 2020 – Dec 2022
   École Polytechnique Fédérale de Lausanne

   Elected for two consecutive terms as a committee member of PolyDoc, the PhD student association at EPFL, serving as the key link between the committee and elected student representatives across all 22 PhD programs; facilitated seamless communication via the Slack channel, coordinated the PhD student body's stance on key issues for doctoral commission (Cdoct) meetings, organized the participation of representatives to attend these meetings, managed the onboarding of new representatives, maintained the representatives' email list, and ensured effective information exchange to enhance community engagement and representation.
3. Head of Communications, YUVA-Indians Aug 2020 – Aug 2023
   École Polytechnique Fédérale de Lausanne

   Elected for three consecutive terms to lead communications for the Indian students' association at UNIL and EPFL, spearheading social media campaigns and organizing outreach events; co-organized and hosted Yuvaali, the annual flagship Diwali celebration, online during COVID, ensuring cultural continuity; produced and hosted the 4-episode mini-series My Journey to Switzerland, addressing FAQs through panel discussions on topics like life in Switzerland, Master's applications, PhD student experiences, and relocation tips, supporting incoming Indian students.
4. Elected Member, Student Union Council (Kårfullmäktige) Jul 2018 – Jun 2019
   KTH Royal Institute of Technology

   Elected representative from Kemisektionen (Chemistry Chapter) at Kårfullmäktige, the highest decision-making body of Tekniska Högskolans Studentkår (THS), comprising students from all 20 chapters; contributed to

decisions on governance, budget, and general issues affecting the union, advocating for the Chemistry Chapter's interests to enhance the student experience.

5. Communications & Marketing Director, BITSAA Intl. May 2018 – Apr 2022
   Birla Institute of Technology & Science
   Managed and created engaging content for BITS Alumni Association's social media accounts (Facebook, Twitter, Instagram), reaching over 100,000 members worldwide; hosted online talk shows and fireside chat series during the annual BITSians' Day, connecting global alumni and fostering meaningful engagement.
6. Committee Member, Chemical U.S. Travels (CHUST) Oct 2017 – Nov 2019
   KTH Royal Institute of Technology
   Elected for two consecutive terms to the CHUST Committee; sourced, promoted, and facilitated summer internships for students at the School of Engineering Sciences in Chemistry, Biotechnology & Health (CBH) by contacting professors to secure positions at leading American and Canadian institutions; managed the distribution of 260,000 SEK in scholarships each term and assisted partner universities in selecting candidates, fostering international collaboration and cultural exchange.
7. International Student Ambassador Oct 2017 – May 2019
   KTH Royal Institute of Technology
   Served as International Student Ambassador for the Master's Programme in Chemical Engineering for Energy and the Environment at KTH, guiding prospective students through the application process, responding to inquiries via email, leading campus tours, delivering presentations, and conducting telephone sessions with newly admitted students to support their transition to the program.
8. Core Team Member, Placement Unit Jan 2014 – Jul 2015
   Birla Institute of Technology & Science
   Served as a core team member, analyzing campus recruitment data alongside company feedback and delivering actionable insights to BITS Administration to refine course structures and placement strategies; boosted student engagement in firm-organized competitions, events, and lectures, fostering stronger industry ties and enhancing career opportunities for students.

Professional & Personal Development:

Science Communication and Outreach

- Contestant, Falling Walls Lab Western Switzerland, Fribourg Jul 2025
  Participated in the Falling Walls Lab, delivering a 3-minute talk titled "Breaking the Wall of Contaminants in Biogas" showcasing a practical method to sample and analyse trace impurities in biogas.
- Local Organizer, Pint of Science Festival, Baden May 2025
  Co-organized a three-day science festival, engaging public with research in a pub setting. Emceed and hosted quizzes as Quiz Master for themes: From Lab to Industry, Of Minds and Monkeys, To Infinity and Beyond, facilitating scientist-audience discussions.

- Semi-Finalist, FameLab 2023, Zurich Apr 2023
  Competed as a semi-finalist in a science communication competition, delivering a 3-minute talk titled "Measuring the invisible: Nanoparticles in the Environment" to a general audience, evaluated on content, clarity, and charisma.
  Link: https://www.youtube.com/watch?v=RGGBk54QRx0.
- Exposition Stand, Scientastic, Lausanne Nov 2022
  Presented a demonstration on algae-based biodegradable packaging ("Emballages biodégradables à partir d'algues") from the GR-LUD group at EPFL's annual science festival, engaging visitors in discussions on sustainable packaging as part of a science and technology outreach initiative.

Courses and Workshops

- Communication and Presentation Skills (Credit-Bearing)
  a. ENG-626 Ma Thèse en 180 Secondes | EPFL | Autumn 2022 (Link: https://www.youtube.com/watch?v=QlAaT06yXHc)
  b. ENG-616 Communication in Science and Technology | EPFL | Autumn 2021
  c. LS1600 Intercultural Competence | KTH | Autumn 2018
- Innovation and Professional Skills (Credit-Bearing)
  a. ENG-645 Create-Protect-Innovate: Bringing Ideas to Market | EPFL | Autumn 2024
  b. 535-0546-00 Patents | ETH Zurich | Autumn 2024
  c. ENG-610 How to Prepare Successful Grant Proposals | EPFL | Autumn 2023
  d. 363-0790-00 Technology Entrepreneurship | ETH Zurich | Autumn 2023
  e. 851-0654-00 The Sustainable Development Goals in Context | ETH Zurich | Spring 2022 (Blog Post: Nano-nano everywhere: Are we really aware?, Link: https://wp-prd.let.ethz.ch/sdgblog2022/chapter/nano-nano-everywhere)
- Teaching and Pedagogical Skills (Credit-Bearing)
  a. ENG-624 Science and Engineering Teaching and Learning | EPFL | Spring 2024
- Science Communication Courses/Workshops (Non-Credit)
  a. Completed workshops at ETH Communication Academy: Basics of Science Communication, Creative Science Communication, Presenting Science to Non-Expert Audiences, Science Communication for Social Media, Science-based Policy Consulting in Energy Policy, Storytelling Skills for Science Communication, Visualizing Science, Writing for the Public.

Cultural Development

- Wine & Spirit Education Trust (WSET) Level 1 Award in Wines, Zurich Wine Academy Aug 2024
  Completed foundational training in wine studies through a structured course focused on major grape varieties, key wine styles, and production methods; developed sensory evaluation skills using the WSET Systematic Approach to Tasting (SAT), complemented by insights into wine chemistry, food pairing principles, and optimal storage & service

practices; enhanced cultural awareness and professional engagement skills, aligning with an interest in global culinary traditions.

- Improvisational Theater, Close Encounters Theatre, Zurich 2025
  Completed beginner and intermediate improv courses, honing listening, spontaneity, teamwork, and narrative skills through games and scene work; performed professional shows at Millers Theater and ComedyHaus in Zurich.

Languages Skills:

- English: Fluent (primary working language for research, teaching, and professional communication)
- Hindi: Fluent (Mother Tongue)
- Bengali: Fluent (Native Speaker)
- German: Beginner (A2 proficiency)