Ali Goksu

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Profile

Chemical Engineer with dual expertise in **Chemical and Process Engineering** and **Electrical & Electronics Engineering**, combining **research excellence** with **practical technical skills**. PhD candidate at the University of Surrey, specialising in **dual functional materials for CO_2 capture and utilisation under ambient conditions**. Over a decade of experience in **laboratory management, teaching, equipment maintenance, and health & safety compliance**. Strong record of **publications, international conference presentations, and collaborations**, complemented by practical experience in **mechanical/electrical repairs** and **outreach activities**.

Education

PhD, Chemical and Process Engineering
University of Surrey, UK | 2022–Present

- Project: Dual Function Materials for Integrated CO_2 Capture and Utilisation
- Focus on ambient pressure CO_2 hydrogenation to methanol and C1 products.
- Hands-on expertise with XRD, SEM, Micro-GC, Mass Spectrometry, Gas Analysers, DSC-TGA, and catalyst testing.
- Prepared COSHH and risk assessment documentation.

MSc, Chemical Engineering
Columbia University, New York, USA | 2012–2014 | GPA 3.17/4.00

- Thesis Projects:
  - Electro-reduction of CO_2 to formic acid on lead electrodes.
  - Passivation analysis of lead for lead-acid battery systems.

BSc, Chemical Engineering – GPA 3.84/4.00 (High Honours, First Place)
BSc, Electrical & Electronics Engineering – GPA 3.34/4.00 (Honours, First Place)
Ataturk University, Turkey | 2005–2010

English Language Certificate (Honours) – ELS Language School, Berkeley, USA | 2011–2012

Professional Experience

Pilot Plant Manager – Fluor Pilot Plant
University of Surrey, UK | 2025–Present

- Oversee day-to-day operations of the Fluor Pilot Plant, ensuring safe and efficient running of experimental setups for chemical process demonstrations and research.
- Manage equipment maintenance, calibration, and modification in collaboration with academic staff, researchers, and students.
- Supervise laboratory users, enforce health and safety standards, and ensure compliance with COSHH and risk assessment procedures.

Tutor – ENG2129 Reaction Engineering
University of Surrey, UK | 2024–2025, Semester 2

- Supported the module lecturer by **assisting students with reaction engineering concepts, problem-solving exercises, and tutorial discussions**.
- Helped clarify theoretical and practical aspects of reactor design and kinetics during tutorial sessions and office hours.
- Contributed to improving student understanding and engagement in core chemical engineering topics.

Laboratory Demonstrator
University of Surrey, UK | 2022–Present

- Supported undergraduate teaching labs in **Saturation Pressure (ENG1083), Reactor Dynamics (ENG2121), and Recycle Loop (ENG1083)**.
- Guided students in correct use of lab equipment, ensured compliance with safety protocols, and provided technical feedback.
- Assisted with experiment setup, troubleshooting, and hands-on demonstrations.

Research & Teaching Assistant
Munzur University, Turkey | 2014–2022

- Led laboratory sessions for chemical engineering and food engineering undergraduates.
- Operated and trained students on analytical instruments: **AAS, UV/VIS, HPLC, GC-MS**.
- Conducted experiments on **potentiometric titration, gas adsorption, surface tension, and iodometry**.
- Maintained equipment, managed lab consumables, and supported research projects.

Garage Technician (Family Business)
Turkey | Summers & Gap Years

- Hands-on repair of cars and mechanical systems.
- Developed practical troubleshooting skills in **mechanical and electrical repairs**.

Volunteer Repair Technician
Repair Café, Guildford, UK | 2023–Present

- Repaired electrical and mechanical household items (lamps, vacuum cleaners, bicycles, toasters).
- Promoted sustainable repair practices and community engagement.

Research Output

Journal Articles

- Goksu, A., Ruiz, S. C., Reina, T. R., & Duyar, M. (2025). *Unveiling the Potential of CaO-modified ZnO Adsorbents for CO_2 Capture*. Carbon Capture Science & Technology, 100484.
- Ak, F., Karakavuk, E., Goksu, A., & Sabancı, S. (2024). *An innovative approach in oat milk production: Ohmic heating*. Food and Bioproducts Processing, 148, 421–427.
- Omaç, B., Göksu, A., Işık, E., & Sabancı, S. (2024). *Modeling changes in couscous cooked with ohmic heating*. Adıyaman Univ. J. Eng. Sci., 11(23), 8–9.
- Çilingir, S., Duran, G., Gökyildiz, B., Goksu, A., Sabanci, S., & Cevik, M. (2024). *Optimization of pectin extraction by ohmic heating*. Food and Bioprocess Technology, 17(8), 2339–2349.
- Omaç, B., Goksu, A., Işık, E., & Sabancı, S. (2023). *Effect of ohmic heating on couscous quality*. Black Sea Journal of Agriculture, 6(6), 615–621.
- Hameed, G., Goksu, A., Merkouri, L. P., Penkova, A., Reina, T. R., Ruiz, S. C., & Duyar, M. (2023). *Optimization of Ni/P atomic ratio for Ni phosphide catalysts in RWGS*. Journal of CO_2 Utilization, 77, 102606.
- Sabanci, S., Kaya, K., & Göksu, A. (2023). *Modeling electrical conductivity values*. Anais da Academia Brasileira de Ciências, 95(2), e20210062.
- Çevik, M., Sabancı, S., & Göksu, A. (2023). *Ohmic extraction of pectin from citrus wastes*. Int. J. Pure Appl. Sci., 9(1), 38–45.
- Goksu, A., Li, H., Liu, J., & Duyar, M. (2023). *Nanoreactor Engineering for CO_2 Tandem Catalytic Conversion*. Global Challenges, 7(6), 2300004.
- Goksu, A., Omac, B., & Sabancı, S. (2022). *Ohmic heating in bulgur cooking*. J. Food Process. Preserv., 46(11), e17025.
- Karakavuk, E., Goksu, A., & Sabancı, S. (2022). *Ohmic evaporation of apple juice*. J. Food Process. Preserv., 46(11), e17036.
- Goksu, A., Duran, G., Çilingir, S., Çevik, M., & Sabanci, S. (2022). *Pectin extraction from grapefruit peel powder*. J. Food Process. Preserv., 46(10), e16813.
- Tanaydin, M. K., & Goksu, A. (2021). *Optimization of methyl green dye adsorption*. Desalination & Water Treatment, 227, 425–439.
- Çilingir, S., Goksu, A., & Sabancı, S. (2021). *Pectin production from lemon peel using ohmic heating*. Food and Bioprocess Technology, 14(7), 1349–1360.
- Sabancı, S., Çevik, M., & Göksu, A. (2021). *Pectin production kinetics with ohmic heating*. J. Food Process Eng., 44(6), e13689.
- Goksu, A., & Tanaydin, M. K. (2017). *Crystal violet dye adsorption by almond shells*. Desalination & Water Treatment, 88, 189–199.
- Ince, O. K., Ince, M., Yonten, V., & Goksu, A. (2017). *Food waste utilization for lead removal*. Food Chemistry, 214, 637–643.

Conference Presentations

Oral Presentations

- UKCC 2025 – *CO_2 hydrogenation over bimetallic catalysts at ambient pressure*, Loughborough, UK.
- PGR Festival of Research Day 2025 – *Hydrogenation of CO_2 to Methanol at Ambient Pressure*, University of Surrey, UK.

Poster Presentations

- Europacat 2025 – *Hydrogenation of CO_2 over Pd-based catalysts and DFMs at ambient pressure*, Trondheim, Norway.
- PGRECR 2025 – *Hydrogenation of CO_2 to Methanol Using DFMs*, Guildford, UK.
- Multiple presentations between 2017–2024 (Turkey, Lithuania, Czech Republic).
- UKCC 2024 – *CO_2 recycling via RWGS using nickel phosphide catalysts*, Loughborough, UK.
- Europacat 2023 – *Dual Function Materials for Circular Methanol Economy*, Prague, Czech Republic.

[*Full list available upon request or as appendix*]

Additional Roles & Volunteering

- **International Student Ambassador** – University of Surrey
- **PGR Representative** – School of Chemistry and Chemical Engineering
- **Open Days, Offer Holder Days, Graduation events** – University of Surrey
- **Repair Café Volunteer** – Guildford (repairing household electronics/mechanical items)

Skills

- **Laboratory Techniques:** SEM, XRD, AAS, UV/VIS, HPLC, GC-MS, Micro-GC, DSC-TGA, Mass Spectrometry, Gas Analysers
- **Engineering Skills:** Mechanical/electrical repair, hand tools
- **Health & Safety:** COSHH, risk assessments, manual handling, lab safety training
- **Computing:** MATLAB, MS Office
- **Languages:** English (fluent), Turkish (native)