

SUMMARY

PhD in Materials Science and Nanoengineering skilled in polymer synthesis, ceramics processing, CNC-machining, and life-cycle assessment. Experienced in inhaler formulation and process development, with expertise in materials characterization using rheometer, SEM/EDX, XPS, XRD, FT-IR, TG-DTA, DSC, AFM, and DLS. Recognized as a Leader of Tomorrow in Biotechnology in 2022. Seeking to leverage a unique blend of technical acumen, innovative thinking, and leadership skills in challenging engineering roles.

EDUCATION**Sabancı University**

Istanbul, Türkiye

PhD in Materials Science and Nanoengineering

2020 – 2024

Research interests: Polymers, colloidal science, additive manufacturing, technical ceramics

Courses assisted: Polymer engineering, Polymer chemistry and physics, Polymer synthesis, Organic chemistry,

Materials selection for product design

Supervised more than 10 undergraduates for their research, head assistant of Sustainability Powerhouse for Life-Cycle Assessment

Imperial College London

London, United Kingdom

MSc in Materials Science and Engineering

2017 – 2018

Dissertation: CuO nanostructures for non-enzymatic glucose sensing

Boğaziçi University

Istanbul, Türkiye

BSc in Chemistry with Double Major in Chemical Engineering

2011 – 2017

Thesis: Design of microchips for tissue engineering and fabrication of microbioreactors

Graduation seminar: Is it possible to repair cartilage defects by using HA-TG gels and young chondrocytes?

CERTIFICATES**OneLeague x Stanford Online**

Global, Online

Certificate of Achievement in Innovate & Entrepreneurship

Feb 2023 – Jan 2024

Modules: Essentials of Entrepreneurship, Negotiation, Cultivating the Entrepreneurial Mindset, Empathize &

Prototype, Finance, Building Business Models

WORK EXPERIENCE**Neutec**

Istanbul, Türkiye

Formulation Development Assistant Specialist

Jun 2019 – Jul 2020

- Supervised pilot manufacturing, technology transfer, and process validation of dry powder and metered dose inhalers (34 different inhalers)
- Designed patient simulation of inhalers
- Collaborated with cross-functional teams to ensure timely development and commercialization of inhalation drug products, applied for FDA approval

GSK

Istanbul, Türkiye

R&D Medical Affairs Intern

Jun 2016 – Jul 2017

- Facilitated launch of meningitis vaccine by preparing training materials for field force
- Accelerated globally conducted antibiotics awareness project and re-launch of Augmentin (SOAR) by proof-reading medical articles
- Simplified global vaccine presentations to be used in Türkiye
- Conducted medical affairs documentation by preparing donations and scientific engagement contracts
- Prepared exam questions for field force and medical department

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Bursa, Türkiye

Quality Control Intern

Aug 2014 – Sept 2014

- Assisted quality control of lubricants by performing daily TBN, viscosity, and density tests
- Project: Research of ISO17025 Laboratory Accreditation

ExxonMobil

Istanbul, Türkiye

Quality Assurance Intern

Sept 2013 – Oct 2013

- Performed quality control of lubricants by performing daily density, demulsibility characteristics, colour, ICP-AES, pour point, viscosity, foaming tendency and flash point tests

AkzoNobel Powder Coatings

Production Intern

Izmir, Türkiye
Jun 2013 – Jul 2013

- Assisted quality control department for a week by performing colour and colour difference, film thickness, particle size, gloss tests and application of electrostatic paint

RESEARCH EXPERIENCE

Aerial Robotics Lab, Imperial College London

Visiting PhD Student

London, United Kingdom

Nov 2022 – Dec 2022

Worked at ARL to test flying modes of bio-inspired gliders for aerial deployment of fertilizers

Akbulut Lab, Sabancı University

Research Assistant

Istanbul, Türkiye

Sep 2020 – Present

Prototyped controlled-release systems, bio-inspired gliders, magnetic fibre robots, and advanced ceramics (Si_3N_4 , Al_2O_3 , MgO , ZrO_2 , and B_4C) to adapt Industry 4.0 (prototyped crucibles, tubes, and aerospace radomes)**Cartilage Engineering and Regeneration Lab, ETH Zürich**

Amgen Scholars Programme Research Intern

Zürich, Switzerland

Jul 2015 – Sept 2015

Worked with Prof. Marcy Zenobi-Wong to regenerate cartilage: conducted the process of cell culturing from the first stage until its implantation. Staining, MTS, live-dead assay, and cryo-sectioning were done.

Akın Laser and Spectroscopy Laboratory, Boğaziçi University

Undergraduate Research Student

Istanbul, Türkiye

Feb 2014 – Aug 2014

Worked with Dr. Ahu Akin to calculate the energy of molecules by using Gaussian, Marvin, and ChemCraft programmes

Nugay Polymer Laboratory, Boğaziçi University

Undergraduate Research Student

Istanbul, Türkiye

Feb 2013 – May 2013

Worked with Prof. Nihan Nugay in Bio-Artificial Pancreas Project: Swelling tests of the synthesized polymer were done.

SKILLS

CHARACTERISATION & TECHNICAL SKILLS: X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), Fourier-transform infrared spectroscopy (FTIR), Atomic force microscopy (AFM), Thermogravimetry differential thermal analysis (TG-DTA), Dynamic light scattering (DLS), Scanning electron microscopy (SEM), Rheometer, Fluorescence, confocal microscopy, Computer numerical control (CNC) machining, Universal testing machine (UTM)

SOFT SKILLS: SOLIDWORKS, ChemCAD, MATLAB, Origin, JMP-SAS, Autodesk Fusion 360, COMSOL (Microfluidics module), SimaPro, OpenLCA

HONORS & AWARDS

2023 Presidential Scholarship Award, One League, California, USA
2022 Leaders of Tomorrow in Biotech, GapSummit, Cambridge, UK
2015 Amgen Foundation Research Scholarship, Zurich, Switzerland
2010 The Duke of Edinburgh's Award Bronze Medal

PEER-REVIEWED JOURNAL ARTICLES

- [1] Ay et al. Self-standing doughs of SiAlONs enable low-volume production through green machining. RSC Nanoscale. 2024 (submitted)
- [2] Arel et al. Life-cycle assessment of 3D printed core-shell structures compared with chemically encapsulated constructs for agricultural applications. ACS Sustainable Chemistry & Engineering. 2024 (submitted)
- [3] Ay et al. Benchtop machining of self-standing alumina doughs for low-number fabrication and prototyping. ACS Applied Materials & Interfaces. 2024 (submitted)
- [4] Ay et al. Coaxial direct ink writing of core-shell meshes enables zero-waste room temperature encapsulation of multivariate fertilizers. Colloids and Surfaces A: Physicochemical and Engineering Aspects. 2024
- [5] Arel et al. Encapsulation of carbon dots in a core-shell mesh through coaxial direct ink writing for improved crop growth. ACS Sustainable Chemistry & Engineering. 2023
- [6] Liu et al. Oxidation of copper electrodes on flexible polyimide substrates for non-enzymatic glucose sensing. Materials Research Express. 2022

CONFERENCES

- [1] Ozhan et al. No material leak, large-scale (even roll-to-roll), and mold-free near net-shaping of advanced ceramics is possible, 18th Congress of the European Ceramic Society, July 2023, Lyon, France
- [2] Ay et al. Prototyping of degradable meshes through direct ink writing for fertilizer release, 38th International Conference of the Polymer Processing Society, May 2023, St. Gallen, Switzerland
- [3] Arel et al. Encapsulation of carbon dots in a core-shell mesh through coaxial direct ink writing for improved crop growth, 38th International Conference of the Polymer Processing Society, May 2023, St. Gallen, Switzerland
- [4] Wang et al. Fluorescent carbon dots for bio-imaging and enhanced light harvesting, European Materials Research Society 2022 Spring Meeting, June 2022, Online
- [5] Ay et al. Harnessing the width of mechanical properties of waterborne polyurethane (WBPU) for biomedical applications, International Biotechnology Congress, 2021, Istanbul, Türkiye

REFERENCES

Assoc. Prof. Ozge AKBULUT ozgeakbulut@sabanciuniv.edu	Faculty Member	Sabanci University, Türkiye	Supervisor
Dr. Volkan EKEN volkan.x.eken@gsk.com	European Renal Medical Director (Secondment)	GSK, United Kingdom	Manager
Dr. Alev OZAKAY alev.x.ozakay@gsk.com	Former Vaccines Country Medical Lead	GSK, Türkiye	Manager
Merve MACIT merve.x.macit@gsk.com	Country Head of HR Switzerland & Sweden and Commercial Business Partner	GSK, Switzerland	Manager
Prof. Anna REGOUTZ anna.regoutz@chem.ox.ac.uk	Associate Professor of Experimental Inorganic Chemistry	University of Oxford, United Kingdom	Supervisor