CANSU ÜLKER TURAN

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Assist. Prof. Dr.

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Research Interests

Waste-Derived Functional Biomaterials; Biomaterials and Nanomaterials; Natural Polymers and Biopolymers; Bioactive Compounds and Polyphenols; Nanoparticle- and Nanofiber-Based Drug Delivery Systems; Controlled and Stimuli-Responsive Release; Sustainable and Value-Added Biomedical Materials; Wound Dressing and Wound Healing; Inorganic–Polymeric Nanocomposites; Enzyme Immobilization and Enzymatic Polymerization.

Education

- **Ph.D** Istanbul Technical University, Department of Chemical Engineering, 2015 - 2022.
  Thesis: Biopolyester/natural polymer blends for biomedical applications
  GPA: 4.00/4.00

- **M.Sc.** Istanbul Technical University, Department of Chemical Engineering, 2013-2015.
  Thesis: Immobilization of lipase on an inorganic support material and polycaprolactone synthesis
  GPA: 4.00/4.00

- **B.Sc. Minor Prog.** Istanbul Technical University, Molecular Biology & Genetics, 2010-2015.

- **B.Sc.** Istanbul Technical University, Department of Chemical Engineering, 2009-2013.
  Thesis: Polycaprolactone synthesis via immobilized and pre-treated lipases
  GPA: 3.81/4.00 (First degree)

Positions

- **Assist. Prof. Dr.** Gebze Technical University, Dept. of Bioengineering, 2024 - present
- **Lecturer** Gebze Technical University, Dept. of Bioengineering, 2022 - 2024
- **Research Assistant** Istanbul Technical University, Dept. of Chemical Engineering, 2013 - 2022

Teaching Experience – Selected Courses

- Controlled Release Systems – Ph.D.
- Advanced Topics in Biopolymers – M.Sc.
- Fundamentals of Biomaterials – B.Sc.
- Bioengineering Design – B.Sc.
- Biopolymers – BSc
- Heat and Mass Transfer in Bioengineering – B.Sc.
- Fluid Mechanics – B.Sc.
- Thermodynamics for Bioengineers – B.Sc.
- Biosensors – B.Sc.

Projects

- Development of Nanofiber-Based Membranes Containing Drug-Loaded Mesoporous Nanoparticles for Skin Cancer Treatment — University Research Project (YÖK-ADEP), Principal Investigator, 2026 – Present.
- Production of Quercetin-Loaded Chitosan Nanoparticle-Embedded Poly(vinyl alcohol)-Based Wound Dressings — TÜBİTAK 1002, Principal Investigator, 2024–2026.
- Synthesis of Temperature- and pH-Responsive Bilayer Hydrogels for Controlled Drug Release Applications — University Research Project (YÖK-ADEP), Researcher, 2024–Present.
- Biopolyester/Natural Polymer Blends for Biomedical Applications — University Research Project (Ph.D. Thesis Project), Researcher, 2018–2022.
- Immobilization of Lipase on an Inorganic Carrier and Synthesis of Polycaprolactone — University Research Project (M.Sc. Thesis Project), Researcher, 2014–2015.

Student Projects

- Production of Chitosan/Gelatin-Based Biocomposite Films Functionalized with Green Tea-Derived Silver Nanoparticles for Wound Dressing Applications – TÜBİTAK 2209A, Advisor, 2023-2024.
- Preparation of Tetracycline-Loaded Chitosan Nanoparticles by Ionic Gelation – TÜBİTAK 2209A, Advisor, 2023-2025.
- Synthesis of Physically and Chemically Dual-Crosslinked Biocompatible and Antibacterial CMC Hydrogels for Drug Release Applications – TÜBİTAK 2209A, Advisor, 2023-2025.
- Biodegradable Packaging Films from Waste Milk – TÜBİTAK 2209B, Advisor, 2024–2026.
- Controlled Release of Curcumin from Chitosan–Alginate Nanofiber Structures – TÜBİTAK 2209A, Advisor, 2025–2026.
- Alginate-Based Biocomposite Films Containing Green-Synthesized ZnO Nanoparticles Using Hibiscus Extract for Wound Dressing Applications – TÜBİTAK 2209A, Advisor, 2025-2026.
- Quercetin- and Tetracycline Hydrochloride-Loaded PVA Films for Acne Patch Applications – TÜBİTAK 2209A, Advisor, 2026-present.

Completed Theses

- Ozer, B. 2026. Production of quercetin-loaded chitosan nanoparticle-embedded polyvinyl alcohol-based wound dressings, Gebze Technical University, Graduate School, Bioengineering Program (M.Sc. Thesis)

Publications

- Taranacı, S., Güneylioğlu, S., **Ulker Turan, C.**, Kaptan, Y., Kutluay, S., Guvenilir, Y. 2026. Biocatalytic hydrogen production from sodium borohydride methanolysis using immobilized Candida antarctica lipase as an environmentally friendly, metal-free biocatalyst, Materials Science and Engineering: B, 329, 119447.
- **Ulker Turan, C.**, Derviscemaloglu, M., Guvenilir, Y. 2024. Enzymatically synthesized lactone-based copolymer and gelatin nanofibrous blends loaded with an olive leaf phenolic compound, Materials Today Communications, 38, 108215.
- **Ulker Turan, C.**, Derviscemaloglu, M., Guvenilir, Y. 2024. Herbal active ingredient-loaded poly(ω-pentadecalactone-co-δ-valerolactone)/gelatin nanofibrous membranes, European Journal of Pharmaceutics and Biopharmaceutics, 194, 62-73.
- **Ulker Turan, C.** and Guvenilir, Y. 2022. Electrospun poly(ω-pentadecalactone-co-ε-caprolactone)/gelatin/chitosan ternary nanofibers with antibacterial activity for treatment of skin infections, European Journal of Pharmaceutical Sciences, 170, 106113.
- **Ulker Turan, C.** and Guvenilir, Y. 2021. Synthesis of poly(ω-pentadecalactone) using lipase immobilized onto a renewable carrier, Rice husk ash and their characterization, Journal of Polymer Materials, 38 (3-4), 271-280.
- **Ulker Turan, C**, Metin, A and Guvenilir, Y. 2021. Controlled release of tetracycline hydrochloride from poly(ω-pentadecalactone-co-ε-caprolactone)/gelatin nanofibers, European Journal of Pharmaceutics and Biopharmaceutics, 162, 59-69.
- **Ulker Turan, C.** and Guvenilir, Y. 2021. Fabrication and characterization of electrospun of biopolyester/gelatin nanofibers, Journal of Biomedical Materials Research – Part B Applied Biomaterials, 109(10), 1478-1487.
- **Ulker, C.,** Gok, Z. And Guvenilir, Y., "Performance Comparison of Commercial and Home-made Lipases for Synthesis of Poly(δ-valerolactone) Homopolymers", J. Renew. Mater. Vol. 7, No. 4, 335-343.
- **Ulker, C.** and Guvenilir, Y., 2018, "Enzymatic Synthesis and Characterization of Biodegradable Poly(w-pentadecalactone-co-e-caprolactone) Copolymers", J. Renew. Mater., Vol. 6, No. 6, 591-598.
- **Ulker, C.,** Gokalp, N., and Guvenilir-Avcibasi, Y., 2016, "Enzymatic Synthesis and Characterization of Polycaprolactone by Using Immobilized Lipase onto a Surface-modified Renewable Carrier", Pol. J. Chem. Tech., Vol. 18, No. 3, 134-140.
- **Ulker, C.,** Gokalp, N., and Guvenilir-Avcibasi, Y., 2016, "Immobilization of Candida antarctica lipase B (CALB) on surface-modified rice husk ashes (RHA) via physical adsorption and cross-linking methods", Biocatal. Biotransform., Vol 34, No. 4, 172-180.
- Gokalp, N., **Ulker, C.,** and Guvenilir, Y., 2016, "Synthesis of Polycaprolactone via Ring polymerization Catalyzed by Candida Antarctica Lipase B Immobilized onto an Amorphous Silica Support", J. Polym. Mater. Vol. 33, No. 1, 87-100.
- Gokalp, N., **Ulker, C.,** and Guvenilir, Y., 2016, "Enzymatic ring opening polymerization of ε-caprolactone by using a novel immobilized biocatalyst", Advanced Materials Letters, Adv. Mater. Lett, 7(2), 144-149.
- **Ulker, C.,** Gokalp, N., and Guvenilir-Avcibasi, Y., 2016, " Poly (ε-caprolactone) synthesis by a novel enzymatic catalyst: *Candida antarctica* lipase B (CALB) immobilized on a modified silica-based material by physical adsorption", Advanced Materials Letters, Adv. Mater. Lett., 7(1), 54-59.

Conference Proceedings

- Anaç-Şakır,İ., Torman-Kayalar, M., Özer, B., **Ulker Turan, C.,** Duranay, S., Birer A.E., 2026: DEAEAM-Based Hydrogels for Controlled Drug Release Applications. X. Polymer Science and Technology Congress with International Participation (PolimerTR 2026), September 16-18 2026, İstanbul, Turkey. (Oral Presentation)
- Özer, B., **Ulker Turan, C.,** 2026: PVA-Based Wound Dressing Films Incorporating Quercetin-Loaded Chitosan Nanoparticles. 35th Annual Conference of the European Society of Biomaterials (ESB 2026), September 7-11 2026, Antwerp, Belgium. (Oral Presentation)
- Okur Aksu, T., Birer, A.E., Torman Kayalar, M., Anaç Şakır, İ., **Ulker Turan, C.,** 2026: Development and characterization of tetracycline-loaded dual crosslinked carboxymethyl cellulose-based hydrogels for wound healing applications. 35th Annual Conference of the European Society of Biomaterials (ESB 2026), September 7-11 2026, Antwerp, Belgium. (Poster Presentation)
- Anaç-Şakır, İ., Torman-Kayalar, M., Özer, B., **Ulker Turan, C.,** Duranay, S., Birer, A.E., Nergiz, M.Ş., and Altınkum, S., 2026: Comparative Study of Binary and Ternary DEAEAM-Based Crosslinked Hydrogels for Controlled Drug Delivery. 26th Polymer Networks Group Meeting, June 21-25 2026, Dresden, Germany. (Poster Presentation)
- Karakuş, C., **Ulker Turan, C.,** 2026: Synthesis of Rice Husk-Derived Mesoporous Silica Nanoparticles, Amine Modification, and Comparative Analysis of Quercetin Loading Performance. 10. GTÜ Lisansüstü Araştırmalar Sempozyumu, May 13-14 2026, Gebze, Kocaeli. (Poster Presentation)
- Özer, B., **Ulker Turan, C.,** 2025: Optimization and Characterization of Quercetin Loaded Chitosan Nanoparticles by Box-Behnken Surface Response Method. 9. GTÜ Lisansüstü Araştırmalar Sempozyumu, May 26-27 2026, Gebze, Kocaeli. (Poster Presentation)
- Keçe, Z., **Ulker Turan, C.** and Guvenilir, Y., 2024: Enzymatically Synthesized Poly(δ-valerolactone) Usage In Controlled Drug Release Systems. International Graduate Research Symposium, May 9-11 2024, İstanbul, Turkey. (Oral Presentation)
- Beyaz Ş., **Ulker Turan, C.** and Guvenilir, Y., 2023: Biomedical Application of an Enzymatically Synthesized Biopolyester. International Graduate Research Symposium, May 16-18 2023, İstanbul, Turkey. (Oral Presentation)
- Dervişcemaloğlu M., **Ulker Turan, C.** and Guvenilir, Y., 2023: Production of Oleuropein Loaded Poly(pentadecalactone-co-valerolactone)/Gelatin Nanofibers for Medical Use. International Graduate Research Symposium, May 16-18 2023, İstanbul, Turkey. (Oral Presentation)
- Dervişcemaloğlu, M., **Ulker Turan, C.** and Guvenilir, Y. 2022: Kurkumin Yüklü Poli(pentadekalakton-ko-valerolakton)/Jelatin Nanofiberlerinin Eldesi, Ulusal Kimya Kongresi (UKK), September 1-6, 2022 Turkey. (Oral Presentation)
- Dervişcemaloğlu, M., **Ulker Turan, C.** and Guvenilir, Y. 2022: Biopolymer Production via Enzymatic Polymerization Method for Medical Use, International Graduate Research Symposium (IGRS), June, 1-3, 2022, Istanbul, Turkey. (Oral Presentation)
- **Ulker Turan C.,** Metin, A. and Guvenilir, Y. 2020: Tetrasiklin Hidroklorür Yüklü Poli(ω-pentadekalakton-ko-ε-kaprolakton)/Jelatin Nanofiberlerinin Eldesi, Ulusal Kimya Kongresi (UKK), September 17-19, 2020 Turkey. (Oral Presentation, Online Conference)
- **Ulker Turan, C.** and Guvenilir, Y., Fabrication of home-made biopolyester/natural polymer nanofibers: potential drug delivery systems, BIOPOL 2019, Stockholm, Sweden, 17-19 June 2019. (Oral presentation)

- Alaluf, K., **Ulker Turan,** C., Özdemir, G. And Guvenilir, Y. Chicken feather and olive cake as renewable support materials for lipase immobilization, BIOPOL 2019, Stockholm, Sweden, 17-19 June 2019. (Poster presentation)
- Kapusuz, N. K., Karip, G., **Ulker, C.** and Guvenilir, Y., A Simple and Sensitive method for the Estimation of Microbial Lipase Activity, Protstab 2018, Vilnius, Lithuania, 16-18 May 2018. (Poster presentation)
- Aydın, Y.A., Gok, Z., **Ulker, C.** and Guvenilir, Y., Enzymatic Synthesis of Poly(ε-caprolactone-co-δ-valerolactone) Copolymers via Ring Opening Polymerization, POC 2018, Palavas, France, 3-7 June 2018. (Poster presentation)
- **Ulker, C.** and Guvenilir, Y., Lipase-catalyzed synthesis and characterization of poly(ω-pentadecalactone): an alternative aliphatic polyester to poly(ε-caprolactone), ECB 2018, Geneva, Switzerland, 1-4 July 2018. (Poster & Flash Poster presentation)
- **Ulker, C.,** Gok, Z., and Guvenilir, Y., Synthesis of Polyvalerolactone Via Enzymatic Ring Opening Polymerization In Different Reaction Media, ECB 2018, Geneva, Switzerland, 1-4 July 2018. (Poster presentation)
- **Ulker C.,** Guvenilir, Y., 2017: Enzymatic ring opening polymerization and characterization of biodegradable ω-pentadecalactone-co-ε-caprolactone copolymers, BIOPOL 2017, 11-13 September, Mons, Belgium. (Poster presentation) (Best poster award)
- Saçlıgil, D., **Ulker, C.,** Guvenilir, Y., 2017: Immobilization of Candida antarctica lipase B (CALB) on trimethoxysilylpropylethylene diamine (TMSP) modified rice husk ash, BIOPOL 2017, 11-13 September, Mons, Belgium. (Poster presentation)
- Gül, A., **Ulker, C.,** Guvenilir, Y., 2017: Biopolymer films reinforced with MWCNTs for tissue engineering applications, BIOPOL 2017, 11-13 September, Mons, Belgium. (Poster presentation)
- **Ulker, C.,** Gokalp, N., Guvenilir-Avcibasi, Y., 2016: Stability of Candida antarctica Lipase B Immobilized onto Different Support Materials via Cross-linking, ProtStab 2016, 9-11 May, İstanbul, Turkey. (Poster presentation)
- **Ulker, C.,** Gokalp, N., Guvenilir-Avcibasi, Y., 2016: Immobilization of Candida antarctica Lipase B onto Surface-Modified Rice Husk Ash via Physical Adsorption, ECB 2016, 3-6 July, Krakow, Poland. (Poster presentation)
- Gokalp, N., **Ulker, C.,** Guvenilir-Avcibasi, Y., 2016: Enhancing the Properties of Candida antarctica Lipase B by Immobilization on Precipitated Silica modified with 3-Aminopropyltriethoxysilane (APTES), ECB 2016, 3-6 July, Krakow, Poland. (Poster presentation)
- **Ulker, C.,** Gokalp, N., Guvenilir-Avcibasi, Y., 2016: 3-aminopropyltriethoxysilane functionalized rice husk ash as a support material for Candida antarctica Lipase B immobilization via cross-linking, BioCat 2016, 28 August-1 September, Hamburg, Germany. (Poster presentation)
- Gokalp, N., **Ulker, C.,** Guvenilir-Avcibasi, Y., 2016: Chemical modification and optimum immobilization of Candida antarctica lipase B on precipitated silica by silanization and crosslinking method, BioCat 2016, 28 August-1 September, Hamburg, Germany. (Poster & Flash Poster presentation)
- **Ulker, C.,** Gokalp, N., Saloglu, D., Guvenilir-Avcibasi, Y., 2015: A Comparative Study of Properties of Lipases Immobilized onto Different Silica-Based Materials via Physical Adsorption to Polymerize Polycaprolactone, BIOPOL 2015, 6-9 October, Donostia-San Sebastian, Spain. (Poster presentation)
- Gokalp, N., **Ulker, C.,** Saloglu, D., Guvenilir-Avcibasi, Y., 2015: Enzymatic Ring Opening Polymerization of ε-Caprolactone by Using Lipases Immobilized On Rice Husk Ash and Precipitated Silica by Crosslinking Method, BIOPOL 2015, 6-9 October, Donostia-San Sebastian, Spain. (Poster presentation)

- **Ulker, C.,** Gokalp, N., Guvenilir-Avcibasi, Y., 2015: Ring Opening Polymerization of ε-caprolactone by a Novel Enzymatic Catalyst Candida antarctica Lipase (CALB L) Immobilized on a Modified Silica-Based Material by Cross-linking. EPF 2015, 21-26 June, Dresden, Germany. (Oral presentation)
- **Ulker, C.,** Gokalp, N., Guvenilir-Avcibasi, Y., 2015: Poly (ε-caprolactone) Synthesis by a Novel Enzymatic Catalyst: Candida antarctica lipase (CALB L) Immobilized on a Modified Silica-Based Material by Physical Adsorption. Advanced Materials World Congress (AMWC) 2015, 23-26 August, Stockholm, Sweden. (Oral presentation)
- Gokalp, N., **Ulker, C.,** Guvenilir-Avcibasi, Y., 2015: Immobilization of Candida antarctica lipase onto an amorphous silica support by physical adsorption method for ring-opening polymerization of ε-caprolactone. EPF 2015, 21-26 June, Dresden, Germany. (Poster presentation)
- Gokalp, N., **Ulker, C.,** Guvenilir-Avcibasi, Y., 2015: Immobilization of Candida antarctica lipase onto an amorphous silica support by cross-linking method for ring-opening polymerization of ε-caprolactone. Advanced Materials World Congress (AMWC) 2015, 23-26 August, Stockholm, Sweden. (Oral presentation)
- Özsağıroğlu, E., **Ulker, C.,** Kılıc, M., Güvenilir, Y., 2013: A new route to ring opening polymerization of ε-caprolactone by ion-paired Thermomyces lanuginosa lipase with hexadecylamine, EPF 2013, 16-21 June, Pisa, Italy. (Poster presentation)
- Özsağıroğlu, E., **Ulker, C.,** Kılıc, M., Güvenilir, Y., 2013: Polycaprolactone synthesis by a new immobilized enzyme Thermomyces lanuginosa lipase, EPF 2013, 16-21 June, Pisa, Italy. (Poster presentation)
- Özsağıroğlu, E., **Ulker, C.,** Kılıc, M., Güvenilir, Y., 2013: Comparing of ring opening polymerization of ε-caprolactone by ion-paired and immobilized Thermomyces lanuginosa lipase, Advanced Materials World Congress, 16-19 September, İzmir, Turkey. (Poster presentation)

Academic Honors and Awards

- First degree in B.Sc. (2012-2013 academic year)
- Best poster award (BIOPOL 2017)

Skills

- **Foreign languages:** English (Advanced), German (Beginner)
- **Software:** MS Office, MATLAB, ChemCad, Origin Lab, Image J, MINITAB
- **Equipment:** Gel Permeation Chromatography (GPC), Differential Scanning Calorimetry (DSC), Electrospinning device