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EDUCATION

Ph.D., Chemical Engineering, University of California, Davis, September 2012.

M.S., Food Engineering, Middle East Technical University (METU), Ankara, TURKEY, September 2007.

B.S., Food Engineering, Middle East Technical University (METU), Ankara, TURKEY, June 2005.

RESEARCH INTERESTS

Molecular Modeling and Simulations of Polymeric, Biomolecular and Colloidal Systems
Applications of Nanotechnology in Food Engineering
Electrospinning and Electrospaying
Food Hydrocolloids

PROFESSIONAL EXPERIENCES

Associate Professor, Izmir Institute of Technology Department of Food Engineering, Izmir, Turkey	2023-present
Assistant Professor, Izmir Institute of Technology Department of Food Engineering, Izmir, Turkey	2013-2023
Research Assistant, University of California, Davis Department of Chemical Engineering & Materials Science, Davis, CA	2010-2012
Teaching Assistant, University of California, Davis Department of Chemical Engineering & Materials Science, Davis, CA	2008-2009

FUNDED PROJECTS AND RESEARCH EXPERIENCE

“Meyve Suyu Durultma Etkinliğini Artıran Yenilikçi Biyokatalitik Nanolifli Derin Filtrasyon Süngeri Geliştirilmesi”, **Principle Investigator**, Department of Food Engineering, IZTECH, AUDP Project no: 2023IYTE-2-0003 (2024-2026).

“Invert Şekerin Su ile Etkileşiminin Moleküler Dinamik Simülasyon ve NMR Relaksometre İle İncelenmesi”, **Researcher**, Department of Food Engineering, IZTECH, (Principal investigator: Assoc. Dr. Halil Mecit Öztöp), METU Department of Food Engineering METU-TEZ-YL-314-2021-10728 (2021-2022).

“Mor Reyhan Antosiyaninlerinin Ultrason Destekli Ekstraksiyon ile Özütlenmesi İşleminin Optimizasyonu”, **Principal Investigator**, Department of Food Engineering, IZTECH, 2020İYTE0077, (2020-2021).

‘Exploring the Solubilization Mechanisms of Curcumin and Beta-carotene in Duodenal Mixed Micelles and the Modulating Factors Through Molecular Dynamics Simulations’, **Principle Investigator**, Department of Food Engineering, IZTECH, TUBITAK Project no:1180378 (2018-2021).

“Exploring the Food Applications of Time Domain (TD) Solid State NMR Techniques; Magic Sandwich Echo (MSE) and Spin Diffusion (SD) Sequences and Their Use on Developing New and Alternative Quality Control Techniques”, **Researcher**, Department of Food Engineering, IZTECH, (Principal investigator: Assoc. Dr. Halil Mecit Öztop, METU Department of Food Engineering, TUBITAK- 2170089), (2018-2020).

“Fabrication and Structural Characterization of Edible Coatings Obtained by Layer-by-Layer Deposition from Lysozyme and Iota-carrageenan”, **Principal Investigator**, Department of Food Engineering, IZTECH, 2017İYTE07 (2018-2019).

“Investigation of Structural and Dynamic Properties of Duodenal Mixed Micelles at Different Conditions by Molecular Dynamic Simulations”, **Principal Investigator**, Department of Food Engineering, IZTECH, 2016İYTE19 (2016-2017).

“Development of Novel Thin Edible Coatings for Fresh-Cut Fruits and Vegetables by Layer-By-Layer Deposition Technique”, **Principal Investigator**, Department of Food Engineering, IZTECH, TUBITAK-1140696, (2014-2016).

“Fabrication and Characterization of Model Edible Nano-Coatings for Fresh-cut Fruits and Vegetables by Layer-by-Layer Assembly: Dipping vs. Spraying”, **Principal Investigator**, Department of Food Engineering, IZTECH, 2014İYTE06, (2014-2015).

“Structure-Property Relationships of Polymer Brushes in Restricted Geometries and Their Utilization as Ultra-Low Friction Lubricants”, **Scholar**, Department of Chemical Engineering and Material Science, UC Davis (Principal Investigators: Prof. Dr. Tonya Kuhl & Prof. Dr. Roland Faller, Funded by USA Department of Energy- DE-FG02-06ER46340), (2006-2012).

“Extraction of Essential Oils from Spices Using Novel Technologies and Physical, Antioxidant and Antimicrobial Properties of These Oils”, **Scholar**, Department of Food Engineering, METU, (Principal Investigator: Prof. Dr. Serpil Şahin, Funded by TUBITAK-1040265), (2005-2007).

DISSERTATIONS/THESES SUPERVISED AND CO-SUPERVISED

Yağmur Balabanlı, Investigating the Aqueous Behavior of D-Glucose, D-Fructose, and D-Allulose by Molecular Dynamics (MD) Simulations and Nuclear Magnetic Resonance (NMR) Relaxometry”, **MSc. Thesis (Co-supervisor)**, METU, The Graduate School of Natural and Applied Sciences, Department of Food Engineering, (2019-2022).

Elif Erez, “Fabrication of colorimetric pH indicator films by electrospinning”, **MSc. Thesis**, IZTECH, The Graduate School of Engineering and Sciences, Department of Food Engineering, (2019-2022).

Nazan Koca, “Structure and gas transmission properties of surface modified food packaging materials by layer-by-layer assembly”, **MSc. Thesis**, IZTECH, The Graduate School of Engineering and Sciences, Department of Food Engineering, (2015-2019).

Esra Tunçer, “Exploring the Factors Modulating Solubilization of β -carotene in Dietary Mixed Micelles through Computer Simulations”, **PhD Dissertation**, IZTECH, The Graduate School of Engineering and Sciences, Department of Food Engineering, (2014 -2018).

Sinem Uney, “Comparison of Dipping and Spraying Methods in the Fabrication of Novel Edible Coatings by Layer-by-Layer Deposition”, **MSc. Thesis**, IZTECH, The Graduate School of Engineering and Sciences, Department of Food Engineering, (2014 -2016).

PUBLICATIONS

Tuncer, E., & Bayramoglu, B., Bugday, Y.B. Multiscale Molecular Dynamics Study of Co-solubilization of Curcumin and β -carotene in Dietary Mixed Micelles in the Presence of Different Fatty Acids (*in preparation*).

Tuncer, E., & Bayramoglu, B., Bugday, Y.B. Curcumin-Dietary Mixed Micelle Interactions as a Function of Fatty Acid Type: A Multiscale Molecular Dynamics Study (*in preparation*).

Tuncer, E., & Bayramoglu, B. Understanding the Effects of Fatty Acids on the Bioaccessibility of β -carotene Under Fed State Conditions: A Coarse-Grained Molecular Dynamics Study (*in preparation*).

Erez, E., Eroglu, A.E., Bayramoglu, B. (2025). Fabrication of electrospun polycaprolactone nanofibrous mats loaded with purple basil extract (*Ocimum basilicum*. L.) as colorimetric pH indicator films. *Food and Bioprocess Technology*. doi.org/10.1007/s11947-025-03903-9

Bugday, Z.Y., Bayramoglu, B., Oztop, H.M. (2025). Investigating the Behavior of D-Glucose, D-Fructose and D-Allulose in Aqueous Media by Molecular Dynamics Simulations. *Journal of Food Engineering*, 394 (1126516). doi.org/10.1016/j.jfoodeng.2025.112516

Erez, E., Bayramoglu, B. (2024). Evaluation of the extracts of purple basil (*Ocimum basilicum* L.) as natural pH-indicator dyes anticipated to be utilised in intelligent food packaging—an optimisation study. *Coloration Technology*; 140: 937-951. doi:10.1111/cote.12754

Bayramoglu, B. (2022). Structural changes in fasted state dietary mixed micelles upon solubilization of beta-carotene. *Int J Agric Environ Food Sci* 6 (3): 480-493.

Tuncer, E., & Bayramoglu, B. (2022). Molecular Dynamics Simulations of Duodenal Self Assembly in the Presence of Different Fatty Acids. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 644, 128866. doi.org/10.1016/j.colsurfa.2022.128866

Koca, N., & Bayramoglu, B. (2022). Layer-by-Layer Assembly of Lysozyme with Iota-carrageenan and Gum Arabic for Surface Modification of Food Packaging Materials with Improved Barrier Properties. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 639, 128391. doi.org/10.1016/j.colsurfa.2022.128391

- Tuncer, E., & Bayramoglu, B. (2019). Characterization of the self-assembly and size dependent structural properties of dietary mixed micelles by molecular dynamics simulations. *Biophysical Chemistry*, 248 :16-27.
- Bayramoglu, B., & Faller, R. (2013). Modeling of Polystyrene under Confinement: Exploring the Limits of Iterative Boltzmann Inversion. *Macromolecules*, 46: 7957-7976.
- Bayramoglu, B., & Faller, R. (2012). Coarse-Grained Modeling of Polystyrene in Various Environments by Iterative Boltzmann Inversion. *Macromolecules*, 45:9205-9219.
- Karakaya, S., El, S. N., Karagozlu, N., Sahin, S., Sumnu, G., & Bayramoglu, B. (2012). Microwave-assisted Hydrodistillation of Essential Oil from Rosemary. *Journal of Food Science and Technology*. doi 10.1007/s13197-011-0610-y.
- Bayramoglu, B., & Faller, R. (2011). Structural Properties of Polystyrene Oligomers in Different Environments: A Molecular Dynamics Study. *Physical Chemistry Chemical Physics*, 13(40): 18107-18114.
- Bayramoglu, B., Sahin, S., & Sumnu, S.G. (2009). Extraction of Essential Oil from Laurel Leaves by Using Microwaves. *Separation Science and Technology*, 44: 722–733.
- Bayramoglu, B., Sahin, S., & Sumnu, S.G. (2008). Solvent-free microwave extraction of essential oil from oregano. *Journal of Food Engineering*, 88(4): 535-540.

BOOK CHAPTERS

- Erez E, Bayramoğlu B. Gıda endüstrisinde nanoteknoloji uygulamaları. Elmacı Y, editör. Geleceğin Gıdaları: Yeni ve Sürdürülebilir Yaklaşımlar ve Teknolojiler. 1. Baskı. Ankara: Türkiye Klinikleri; 2025. p.55-63.

CONFERENCE PROCEEDINGS

- Erez, E. & Bayramoglu, B. Optimization of ultrasound-assisted extraction of purple basil (*Ocimum basilicum*. L.) extracts by response surface methodology in pursuit of effective natural pH-indicator dyes. *5th International Eurasian Conference on Biological and Chemical Sciences, Ankara, 23-25 November 2022, (Oral presentation)*.
- Tuncer, E. & Bayramoglu, B. Interactions Between Curcumin and Dietary Mixed Micelles Explored by Molecular Dynamics Simulations. *2nd International/12th National Food Engineering Congress, Ankara, 25-27 November 2021, (Oral presentation)*.
- Tuncer, E. & Bayramoglu, B. Molecular Level Depiction of How Stearic Acid Enhances β -carotene Solubilization in Dietary Mixed Micelles. *XXI. EuroFoodChem Conference, Online, 22-24 November 2021 (Poster presentation)*.
- Tuncer, E. & Bayramoglu, B. Co-solubilization of β -carotene and Curcumin in Intestinal Mixed Micelles Investigated by Molecular Dynamics Simulations. *4th Food Structure and Functionality Forum Symposium (Elsevier), Online, 19-20 October 2021 (Poster presentation)*.

- Balabanlı, Y., Oztop, H.M., Bayramoglu, B. Basit Şekerlerin Doymuş Çözeltilerdeki Davranışlarının Moleküler Dinamik (MD) Simülasyon ile İncelenmesi. *Türkiye 13. Gıda Kongresi, Çanakkale, 2020 (Oral presentation)*.
- Tuncer, E. & Bayramoglu, B. (2019). Structural Characterization of Mixed Micelles Formed In The Presence of Medium- and Long-Chain Fatty Acids by Molecular Dynamics Simulations. *Proceedings of First International Biological, Agricultural and Life Science Congress, Lviv, Ukraine, 2019, (Oral presentation)*.
- Koca, N. & Bayramoglu, B. (2018). Development and characterization of surface-modified food packaging materials from lysozyme and gum arabic by layer-by-layer assembly. *5th International ISEKI-Food Conference, Stuttgart, Germany, 2018, (Oral presentation)*.
- Tuncer, E. & Bayramoglu, B. (2016). Investigation of mixed micelle structures formed by cholate and POPC at fasted state with molecular dynamics simulations. *30th EFFoST International Conference Targeted Technologies for Sustainable Food Systems, Vienna, Austria, 2016, (Oral presentation)*.
- Uney, S. & Bayramoglu, B. (2016). Structural properties of model ultrathin edible coatings from chitosan and sodium caseinate prepared by layer by layer assembly dipping versus spraying. *4th International ISEKI_Food Conference, Vienna, Austria, 2016*.
- Bayramoglu, B. & Uney, S. (2015). Multilayered Edible Coatings from Chitosan and Sodium Caseinate by Layer-by-Layer Assembly. *4th International Conference and Exhibition on Food Processing and Technology, London, UK, 2015*.
- Kacar, E. & Bayramoglu, B. (2014). Factors Affecting the Bioavailability of Carotenoids. *NAFI2014-International Congress Novel Approaches in Food Industry, Kusadasi, Turkey, 2014*.
- Faller, R., & Bayramoglu, B. (2014). Exploring the Limits of the Iterative Boltzmann Inversion. *APS March Meeting, 2014, Denver, Colorado, 2014. (Oral presentation)*.
- Bayramoglu, B., & Faller, R. (2011). Coarse-Grained Modeling of Polystyrene at Different Concentrations Using the Iterative Boltzmann Inversion Technique. *APS March Meeting, 2011, Dallas, TX, 2011*.
- Faller, R., Huang, D., Bayramoglu, B., & Moule, A. (2011). Systematic Multiscale Modeling of Polymers. *APS March Meeting, 2011, Dallas, TX, 2011. (Oral presentation)*.
- Bayramoglu, B., & Stroeve, P. (2010). Ultrathin Edible Coatings by Layer-By-Layer (LbL) Assembly Technique. *Annual Meeting of the Institute of Food Technologists (IFT), Chicago, IL, 2010. (Oral presentation)*.
- Faller, R., Elliot, I., Bayramoglu, B., Mulder, D., & Kuhl, T. (2010). Confined Polymer Systems: Synergies Between Simulations and Neutron Scattering Experiments. *Pacificchem 2010, International Chemical Congress of Pacific Basin Societies, Honolulu, HI. (Oral presentation)*.
- Bayramoglu, B., Sahin, S., & Sumnu, S.G. (2008). Microwave assisted hydrodistillation of essential oils from rosemary. *CIGR International Conference of Agricultural Engineering, Brazil, 2008*.
- Bayramoglu, B., Sahin, S., & Sumnu, S.G. (2007). Solvent-free microwave extraction of essential oil from oregano. *3rd CIGR Section VI International Symposium on Food & Agricultural Products: Processing and Innovation, Naples, Italy, 2007*.

PROFESSIONAL DEVELOPMENT

“Martini Workshop”. (2015). University of Groningen, Groningen, The Netherlands.

“International Workshop on Food Packaging: Balancing Functionality with Low Environmental Impact”. (2014). Izmir Institute of Technology, Izmir, Turkey.

“ICMR Summer School on Nanoscale Science of Biological Interfaces”. (2010). UCSB, Santa Barbara, CA.

HONORS AND AWARDS

Best Poster Award, 4th International Conference and Exhibition on Food Processing & Technology, London, UK, 2015.

Teaching Assistant of the Year, Department of Chemical Engineering & Materials Science, UC Davis, 2009.

Graduate Student Association (GSA) Travel Award, UC Davis, 2009.

International PhD Fellowship Program, TUBITAK, Ankara, 2007-2008.

Scholarship in The Support Program for Scientific and Technological Research Projects, TUBITAK, Ankara, 2006-2007.

COURSES

FE 105 Introduction to Food Engineering (Partially Taught)

FE 211 Basic Programming for Engineers

FE 204 Numerical Methods in Engineering

FE 303 Thermodynamics

FE 302 Mass Transfer

FE 403 Food Process Design (Partially Taught)

FE 420 Graduation Project

FE 580 Special Topic in Food Engineering (*Graduate*)

FE 544 Analytical Methods in Food Engineering (*Graduate*)

FE 532 Food Engineering Principles (*Graduate*)

FE 548 Physicochemical Properties of Food Colloids (*Graduate*)