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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 Electrospraying

Food Hydrocolloids

## **PROFESSIONAL EXPERIENCES**

Associate Professor, Izmir Institute of Technology 2023-present  
Department of Food Engineering, Izmir, Turkey

Assistant Professor, Izmir Institute of Technology 2013-2023  
Department of Food Engineering, Izmir, Turkey

Research Assistant, University of California, Davis 2010-2012  
Department of Chemical Engineering & Materials Science, Davis, CA

Teaching Assistant, University of California, Davis 2008-2009  
Department of Chemical Engineering & Materials Science, Davis, CA

## **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 Öztop), METU Department of Food Engineering METU-TEZ-YL-314-2021-10728 (2021-2022).

“Mor Reyhan Antosiyaniñlerinin 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/THESSES 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  $\beta$ -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  $\beta$ -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  $\beta$ -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. *5<sup>th</sup> 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. *2<sup>nd</sup> International/12<sup>th</sup> National Food Engineering Congress, Ankara, 25-27 November 2021, (Oral presentation)*.

Tuncer, E. & Bayramoglu, B. Molecular Level Depiction of How Stearic Acid Enhances  $\beta$ -carotene Solubilization in Dietary Mixed Micelles. *XXI. EuroFoodChem Conference, Online, 22-24 November 2021 (Poster presentation)*.

Tuncer, E. & Bayramoglu, B. Co-solubilization of  $\beta$ -carotene and Curcumin in Intestinal Mixed Micelles Investigated by Molecular Dynamics Simulations. *4<sup>th</sup> 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)*.

Uneý, 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. & Uneý, 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. *Pacifichem 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, 4<sup>th</sup> 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*)