



Seminars in Biotechnology BTEC 591 & BTEC 691

“Elektrospun Polymeric Nanofibers for Specialized Biomedical and Sensing Applications”

Thursday, November 10, 2022

13:00

GTU Institute of Biotechnology, Lecture Hall

Dr. Havva BAŞKAN BAYRAK



Composite Technologies Excellence Center, Sabancı University

Dr. Havva Başkan Bayrak received her BSc, MSc, and PhD degrees in Textile Engineering from Istanbul Technical University, in 2012, 2015 and 2021, respectively. Between 2013 and 2021, she worked as a Research Assistant in Textile Technologies and Design Faculty, Istanbul Technical University. During her PhD term, between 2019-2010, she conducted the PhD studies in Ghent University, Belgium in the Centre of Textile Science and Engineering and worked for a European Project named ‘PolyBioSkin’. In addition, she has been in Manchester, United Kingdom as a visiting researcher for the European Project ‘E-TEXWELD (H2020-MSCA-RISE-2014)’ between June 2016 and September 2016. Since July 2021, she has been studying as a post-doc researcher in Sabancı University, Composite Technologies Excellence Center, Istanbul. Her research interest includes electrospinning of nanofibers, biomedical applications of nanofibers, in-situ polymerization of conducting monomers, in-situ fabrication of silver nanoparticles, emulsion polymerization of polyacrylonitrile and itaconic acid, upcycling of waste plastics for graphene production and sustainability. She is the author of more than 10 research articles, 1 US-patent, 18 international and 2 national conference papers, and 4 book chapters. In addition, she worked as a researcher in 4 research projects during her MSc and PhD term. Moreover, Dr Baskan Bayrak was a recipient of the 8th International R&D Project Market Second Prize Winner in the field of ‘Medical Textiles and Medical Devices’.

Abstract

Functional materials have taken great interest due to their superior physical and chemical features which allow them to be successfully used in a wide range of engineering applications. A combination of two or more materials in a nanofibrous structure can result in functional materials for specific applications such as the biomedical field. In the scope of this talk, it is going to be mentioned about the usage of various electrospun polymeric nanofibers used as antimicrobial tissues, wound dressings, and vascular grafts. The preparation of silver nanoparticles (AgNPs) by reduction of silver salt (AgNO₃) in situ by means of only synthesized poly(acrylonitrile-co-itaconic acid) (P(AN-co-IA)) polymers and N,N dimethylformamide (DMF) and thereafter the fabrication of P(AN-co-IA)/Ag nanofibers via

conventional and co-axial electrospinning, the production of poly(3-hydroxyoctanoate-co-3-hydroxy decanoate) (P(3HO-co-3HD)/Ag nanofibers, the preparation of poly(nonamethylene terephthalate)(PAT) nanofibers and their spectroscopic, morphologic, and biological activities will be the main highlighted issues as well as the future work plans.