



SEMINAR ANNOUNCEMENT

Composite Materials: From Damage Mechanism in Aerospace to Sustainable Manufacturing and Recycling

by

Dr. Sayid Daşatan

**DATE & PLACE: 9 SEPTEMBER 2025 TUESDAY
at 14:30, E200**

Abstract

In this seminar, I will provide an overview of my research journey, from fundamental damage mechanisms in aerospace-grade composites to sustainability and recycling, which cover real-world engineering challenges across the entire lifecycle of composite materials.

My research foundation was established during my PhD with an investigation of damage in GFRP tapered composite laminates. This work focused on developing high-fidelity computational models to simulate complex failure mechanisms, validated through an extensive experimental campaign. This provided a critical understanding of damage propagation in high-performance aerospace structures. Building on this, I will discuss my contribution to the FLOWER project, which successfully developed cost-effective, lightweight, and environmentally friendly natural fibre composites as viable alternatives to glass fibres. My work involved the comprehensive characterization and modelling of these bio-based materials for applications in the automotive and marine sectors.

The seminar will then cover my role in the EMPHASIZING (Enhancing Material Properties of Recycled Glass Fibres through Sizing) project, which addresses the critical challenge of composite waste. This research targets the wind energy and automotive sectors by developing innovative sizing treatments to transform recycled glass fibres from landfilled waste into a high-value reinforcement material, promoting a circular economy for composites. Finally, I will touch upon my work on the Thermally Assisted Piercing of Acoustic Liners (TAPACO) project, which explored advanced manufacturing techniques for aerospace components.

Biography

After completing his undergraduate and master's studies in Mechanical Engineering in Iran, he began his Ph.D. at Middle East Technical University (METU) in 2014. His doctoral research, conducted as part of a project funded by Turkish Aerospace Industries, focused on the damage analysis of tapered composite laminates. He also served as a Research/Teaching Assistant at TED University (2015–2021). After completing his Ph.D. in 2021, he joined the University of



Middle East Technical University
Department of Mechanical Engineering

MIE

Portsmouth as a Postdoctoral Research Associate, where he worked on an EU-funded project developing and characterizing natural fibre composites for sustainable engineering applications. In 2023, he started a position as a Research Fellow at the Brunel Composites Centre, contributing to several EU and UK-funded academic and industrial projects on sustainable composite development, advanced recycling and upcycling, graphene-based reinforcement, advanced processing, and life cycle assessment.

His research interests include the modelling, characterization, damage analysis, and life cycle assessment of advanced and sustainable natural composites. He also aims to integrate artificial intelligence (AI) and machine learning (ML) into his future research on composite materials.