

# MEON Seminar Slot

**Date, Hour, Location:**

20<sup>th</sup> November 2024, 3-4pm, CENIMAT Auditorium

**Title:** Exploring Graphene, Thin Films, and Plasma Process: Research and Applications at UFTM

## Abstract

Nanostructured materials have been extensively studied and applied in several fields of engineering and basic sciences. Synthesizing or enhancing the properties of these materials using cost-effective and environmentally friendly techniques has been a key research goal for groups at several Brazilian and Portuguese universities. In this presentation, we will discuss strategies for obtaining graphene multilayers via thermal and mechanical exfoliation from natural graphite as an alternative to commonly used chemical synthesis methods. The presentation will highlight results and insights obtained by our group over recent years on potential applications of these particles in composite materials, energy storage and conversion devices, electrochemical sensors, flexible electrodes and nanofluids. We will also briefly explore applications related to surface treatment using reactive plasma processes, such as PECVD and sputtering, with a focus on modifying graphene surfaces and applying niobium oxide films to metallic alloys to enhance properties such as biocompatibility and corrosion resistance. This talk aims to stimulate new discussions and applications of these materials, thereby strengthening collaborations between researchers from UFTM and FCT.

## Speaker – Rogério Valentim Gelamo



Professor (Associated - Institute of Technological and Exact Sciences) at the Federal University of Triângulo Mineiro (UFTM - Brazil) since 2010, with a Bachelor's degree in Physics (1999), a Master's degree in Physics (2002), and a PhD in Physics (2007). His research primarily focuses on thin film synthesis and plasma processes for deposition and surface treatment. His work also includes research on the synthesis, modification and characterization of graphene multilayers. He has developed research in sensors, flexible solid-state supercapacitors, biocompatible materials, corrosion-resistant films, among others. Currently, he is conducting postdoctoral research at FCT with a fellowship granted by the Research Support Foundation of the Minas Gerais (FAPEMIG), focusing on materials and photovoltaic devices in collaboration with Professor Hugo Águas.