

I hold a **Ph.D. in Chemistry** from **Instituto Superior Técnico (IST)**, where I developed my doctoral research on the **structural and mechanical characterization of metallic nanocomposites and ionic liquid mixtures incorporating carbon allotropes, using molecular dynamics simulations.**

After earning a **Chemical Engineering degree** from IST in **2007**, I joined **Kemet Electronics** as an **R&D Engineer in capacitor development**. In **2010**, I returned to IST as a **research fellow**, where I worked on **computational modeling of carbon nanostructures and ionic liquids**, leading to the **publication of five first-author papers and one book chapter** before securing an **FCT PhD grant in 2015**.

After obtaining my Ph.D. in **2019**, I worked as a **postdoctoral researcher in two projects**, expanding my expertise in **computational modeling of doped graphene/metal and polymer nanocomposites**. During this period, I **co-supervised one Ph.D. thesis and mentored two additional doctoral students** in molecular dynamics applications.

In **2022**, I was awarded a **six-year Junior Researcher contract at IST** through the **FCT Individual Call to Scientific Employment Stimulus**, but I chose to join the **Institute for Polymers and Composites (IPC)** as a **permanent Assistant Researcher**. At IPC, my current research interests include the **determination of structural properties and interface relationships in polymeric and biopolymeric nanocomposites** integrating **2D/3D carbon allotropes and MXenes**, with applications ranging from **electromagnetic shielding to the 3D printing of bone scaffolds**. Another area of interest is the **development of electrolytes for flexible solid-state batteries**, employing **ionic liquids and metal-organic frameworks (MOFs)** through computational modeling. Additionally, my work extends to the **molecular simulation of hybrid carrageenan gelation**, examining its **structural properties and phase behavior**. My approach combines **molecular dynamics (MD), density functional theory (DFT), and continuum modeling techniques** to investigate and optimize the performance of these advanced materials.

I am the **Principal Investigator of a FCT-PEX project**, which focuses on the **development and evaluation of polyhydroxyalkanoate/MXene biocomposites for 3D-printed bone tissue scaffolds**, integrating both **experimental and in silico approaches**. I also lead an **international extra-exploratory research project** within the **UT Austin Portugal Program**, dedicated to the **development of ultra-efficient nanoporous membranes for desalination, based on transition metal carbonitrides**.

With an **h-index of 9 (431 citations)** according to **Scopus**, I have published **22 papers in ISI Q1 peer-reviewed journals (14 as first author, 8 as corresponding author)**, co-authored **two book chapters**, and contributed to numerous **international conferences**. My academic responsibilities include **co-supervising one Ph.D. student, four MSc students, teaching seven graduate courses at the Polymer Engineering Department**, and serving as **the main examiner in one Ph.D. and one MSc defense**. I have also participated in the evaluation of **two pre-proposals and four full proposals for M-ERA.NET**.