



澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU



應用物理及材料工程研究院
INSTITUTO DE FÍSICA APLICADA E ENGENHARIA DE MATERIAIS
INSTITUTE OF APPLIED PHYSICS AND MATERIALS ENGINEERING

LAPME Seminar

Dendrimers on health – a personal overview

Prof. João Rodrigues

CQM – Centro de Química da Madeira, MMRG, Universidade da Madeira

Date: 2 July 2024; Time: 14:30 - 15:30; Venue: N23-4018

Dendrimers are quite peculiar polymers as they grow from a central core, layer by layer (each layer is denominated a “generation”), adopting a spherical shape. Even if the number of generations and terminal groups on the surface may be limited by steric hindrance on the dendrimer surface, these dendritic systems expose an increasing number of terminal groups on their surface as they grow. Due to their structural perfection and size - on the range of biomolecules, such as DNA duplexes (~2 nm), insulin (~3 nm), cytochrome C (~3-4 nm), hemoglobin (~5.5 nm), or lipid membranes (-4-5 nm), dendrimers are very interesting polymers to be applied in the biomedical field. They are studied as drugs per se for a series of clinical problems, such as inflammation, infection (like bacterial, fungal, viral, and parasitic infections), cancer, and neurodegenerative disorders. This wide range of possible direct applications in medicine results from the versatility of dendrimers in terms of their chemical composition and the many variations allowed to their architecture. In this communication, we will present the potential applications of dendrimers in the health area, particularly in oncology, highlighting the contribution of our group to the field.



Professor João Rodrigues obtained his Ph.D. in inorganic chemistry from the University of Lisbon in Portugal. Since 2022, he has been working as an Assistant Professor with Habilitation at the University of Madeira, Portugal, and has been serving as the Director of CQM-Centro de Química da Madeira/Madeira Chemistry Research Centre (a National Research Laboratory) since 2006. Additionally, from 2017 to 2020, he held the position of Adjunct Professor at the School of Materials Science and Engineering at Northwestern Polytechnical University in Xi'an, China. From 2017 until 2023, he was a member of the Scientific Board of Exact Sciences and Engineering at the Portuguese National Science Foundation (FCT - Fundação para a Ciência e a Tecnologia).

His research at the CQM focuses on preparing and characterizing dendritic polymers, polymeric metal-containing systems, nanoparticles (soft and hard), nanofibers, and carbon materials for potential use in health applications such as oncology and HIV treatment. His significant contributions include the synthesis and study of dendrimers and metallodendrimers for biomedical applications. Throughout his career, he has published over 115 peer-reviewed papers in prestigious journals. His publications have been cited more than 5500 times in high-impact journals and 43 times by patents. He holds an h-index of 36 (excluding self-citations) with 88% of his papers in the top 25% most cited documents worldwide.



Speaker's contact:

joaor@uma.pt

Enquiry: Ms. Chan (sarahchan@um.edu.mo)