

## Dendrimers and metallodendrimers for biomedical applications- A recent overview

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Dendrimers and metallodendrimers are a class of compounds related with the large family of hyperbranched polymers. However, dendrimers are 3D monodisperse molecular (nano) architectures, formed by three basic structural units: The core, branching units and terminal groups, each of which determine the properties of the dendrimers such as the size, shape, nature of the interior of the dendrimer, the capacity to encapsulate other molecules/nanoparticles, and the hydrophilicity or lipophilicity of the dendritic system. Their versatility and possibility of customization made them particularly interesting for biomedical applications and motive of interest from academia and companies all over the world. Also, the development of polynuclear metal complexes, such as metallodendrimers proved to be a good option for biomedical applications e.g. as anticancer drug candidates. Surprisingly, in the last two decades, only a few examples of metallodendrimers with potential application as anticancer drugs were reported, and most of them used diaminobutane polypropylene imine (DAB-PPI) or poly(amidoamine) dendrimers (PAMAM) as cores. In this communication we will overview the most important contributions to the area, highlighting our recent work on PAMAM dendrimer derivatives for gene delivery into mesenchymal stem cells, and the use of poly(alkylidenamines) ruthenium based metallodendrimers as anticancer drug carriers.

### Biography

João Rodrigues got the Ph.D. on Inorganic Chemistry from the University of Lisbon (Portugal). He is Scientific Coordinator of CQM-Centro de Química da Madeira, head of the MMRG-Molecular Materials Research Group and Director of the Master in Nanochemistry and Nanomaterials at the University of Madeira (Portugal). His scientific work has been mainly devoted to the preparation and characterization of potential useful molecular materials, namely dendritic (hyperbranched), polymeric metal-containing systems and nanoparticles, to be used as electronic and/or biomedical nanomaterials. He is author of 33 peer-reviewed articles (h=11), 1 book chapter, 9 proceeding papers, 13 invited lectures in international conferences and 50 other oral presentations.

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