

<b>Título</b>	Synthesis of new 3D- $\eta^5$ -carboranyl ruthenium complexes derivatized with biotin towards combinatory therapy of cancer
<b>Resumo</b> <b>(incluindo objetivos a atingir)</b>	<p>Recently, the Organometallic Research Group from <i>Centro de Química Estrutural, at Faculdade de Ciências da Universidade de Lisboa</i> has synthesized new 3D-<math>\eta^5</math>-carboranyl ruthenium complexes derivatized with polymeric ligands to be used for the combinatory therapy of cancer, i.e., traditional chemotherapy and neutron therapy.[1] The preliminary results obtained so far showed adequate Ru and B internalization in cancer cell lines, thus anticipating the success of this approach. Thus, the goal of this Master project is to go a step further, by increasing the selectivity of the compounds for malignant cells/tissues, by the addition of biotin (vitamin B7), which receptors are overexpressed in cancer cells.</p> <p><b>Working Plan:</b> This project offers an excellent formation in chemical synthesis (and compounds purification) using <i>Schlenk</i> techniques, together with several characterization techniques, such as spectroscopic (FTIR, NMR, UV-Vis., MS). The work is thus divided in four steps:</p> <p><b>i)</b> Synthesis and purification of new organometallic compounds;</p> <p><b>ii)</b> Characterization: the new compounds will be characterized by the usual spectroscopic techniques, cyclic voltammetry, elemental analysis and X-ray diffraction whenever possible, between others.</p> <p><b>iii)</b> The new organometallic Ruthenium compounds will contain polymeric chain functionalized with biotin, which forms micelles in aqueous and PBS solutions. These aggregates will be studied by DLS technique.</p> <p><b>iv)</b> Evaluation of the anticancer potentialities of the new compounds: cell distribution assays and cytotoxicity in human cancer cell lines.</p>
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<b>Informações</b>	References: [1] Ricardo Teixeira, MSc. Thesis in Chemistry, FCUL, entitled "Synthesis of new 3D- $\eta^5$ -carboranyl and $\eta^5$ -methylcyclopentadienyl ruthenium complexes incorporating bipyridine (macro)ligands as promising anticancer agents"