^{18}F-RADIOLABELING OF MAIN GROUP AND TRANSITION METAL BASED CHELATES FOR PET IMAGING APPLICATIONS

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The favourable properties of ^{18}F make it one of the most utilised radioisotopes in Positron Emission Tomography (PET). Research based on inorganic scaffolds (instead of the traditionally utilised C-^{18}F bond) has increasingly developed in the last decade.[1] Exploiting strong M-F bonds (where M = transition metal or main group element), stable metal-fluoride chelates have been investigated as inorganic alternatives to more commonly used C-^{18}F tracers.[2] Complexes of scandium,[3] aluminium[4] and gallium[5] have been studied due their high affinity for fluoride. Many of these chelates have achieved fast radiolabelling in aqueous media and good radiochemical yields, as well as suitable stability *in vivo*.

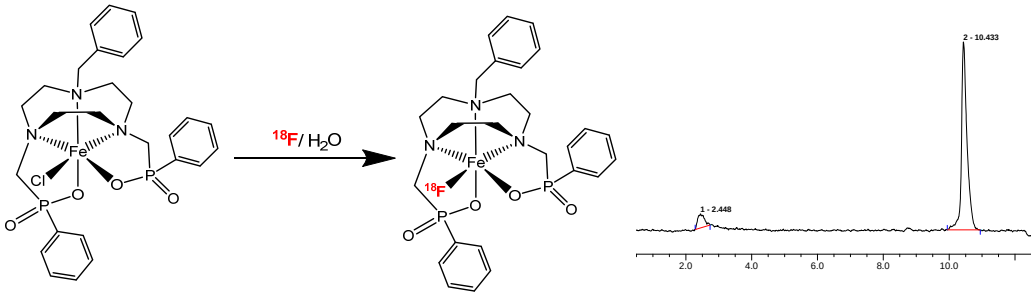

Figure 1: Example scheme of a radiolabelling experiment for [FeCl(Bn-NODP)].

We have investigated the coordination of triaza-macrocycles with functionalised pendant arms to chelate to metals(III) halides, *inc.* Ga(III) and Fe(III), to form novel six-coordinate coordination complexes, [MX(κ^5-L)]. The new tailored pentadentate ligand, Bn-NODP (Figure 1), allows us to exploit the increased stability provided by *bis*-phosphinate pendant arms, while providing a coordination site for a halide to subsequently undergo exchange reactions with ^{18}F. The complexes [MCl(Bn-NODP)] (M = Fe or Ga) shows excellent ^{18}F uptake and stability over time in aqueous media.

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