

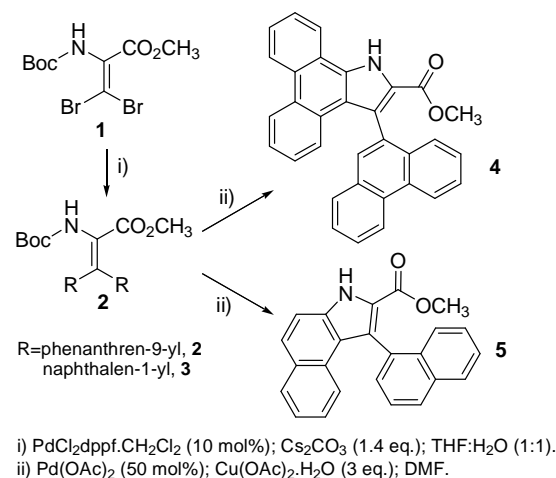
# Synthesis of new chemosensors for fluoride ion from dehydroamino acid derivatives

Goreti Pereira,<sup>a</sup> Elisabete M.S. Castanheira,<sup>b</sup> Paula M.T. Ferreira,<sup>\*,a</sup> Luís S. Monteiro,<sup>a</sup> Maria-João R.P. Queiroz,<sup>a</sup>

<sup>a</sup>Department of Chemistry, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal; <sup>b</sup>Centre of Physics, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal

pmf@quimica.uminho.pt

The development of new anion sensors constitutes an important area of research. Fluoride is an important anion since it is a common ingredient in several drugs and also in water. The excess to fluoride exposure can cause severe damages to living organisms. Thus, detection of this anion using simple procedures is desirable.[1] In our laboratories we have developed a strategy for the synthesis of new bi-, tri- and tetracyclic heteroaromatic compounds from dehydroamino acid derivatives using a tandem Suzuki-Myiaura coupling followed by a metal assisted intramolecular C-N cyclization reaction.[2] Continuing this work and in order to prepare new chemosensors, we have decided to apply our strategy to the synthesis of a methyl 3-(phenanthren-9-yl)-1*H*-dibenzo[*e,g*]indole-2-carboxylate, **4** and a methyl 1-(naphthalen-1-yl)-3*H*-benzo[*e*]indole-2-carboxylate, **5** (Scheme 1). The Suzuki coupling afforded the  $\beta,\beta$ -disubstituted dehydroamino acids, **2** and **3** which were submitted to our cyclization conditions giving compounds **4** and **5** in 30 % and 86 % yield.



Scheme 1

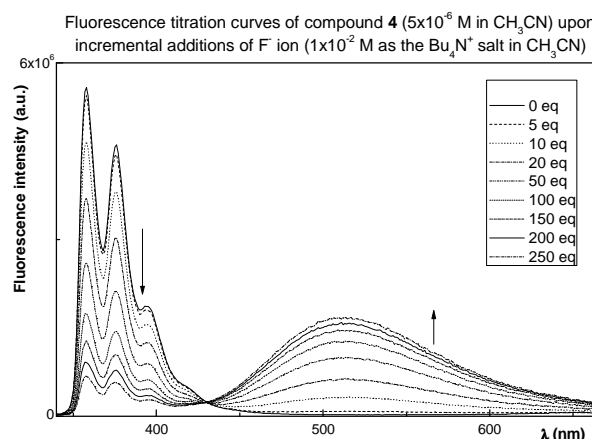


Figure 1

Compounds **4** and **5** are highly fluorescent, with quantum yields in cyclohexane of 0.42 and 0.72, respectively. The fluorescence spectra recorded during titration of solutions of **4** (Figure 1) and **5** with F<sup>-</sup> in acetonitrile show the decrease of the compound emission and the growth of a new emission band at longer wavelengths, due to a complex with the fluoride. The results obtained show that these compounds can be used as sensors for fluoride ion.

- 1) T. Gunnlaugsson, M. Glynn, G.M. Tocci, P.E. Kruger, F.M. Pfeffer, *Coord. Chem. Rev.*, **2006**, *250*, 3094-3117.
- 2) (a) M.J.R.P. Queiroz, A.S. Abreu, E.M.S. Castanheira, P.M.T. Ferreira, *Tetrahedron*, **2007**, *63*, 2215-2222. (b) M.J.R.P. Queiroz, E.M.S. Castanheira, M.S.D. Carvalho, A.S. Abreu, P.M.T. Ferreira, H. Karadeniz, A. Erdem, *Tetrahedron*, **2008**, *64*, 382-391.

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