

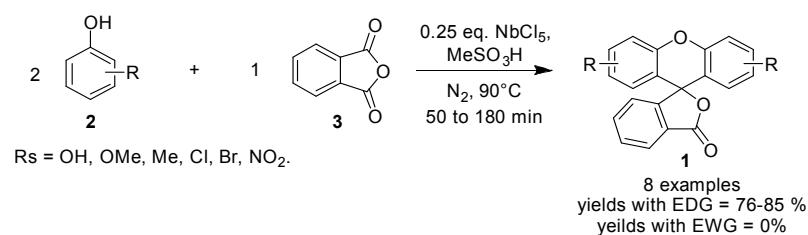
Synthesis of fluorescein derivatives by Multicomponent Friedel-Crafts reaction using Niobium pentachloride as Lewis acid

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The fluorescein derivatives are an important class of heterocyclic compounds and has been attracting a large interest in the scientific community, taking several photochemistry and biochemical applications, such as: dyes in solar cells and other organic devices, and probes for use as cell biomarkers.[1] The Friedel-Crafts reaction is one of the most important reactions to formation of carbon-carbon bonds, leading to formation of aromatic ketones and alkylated rings.[2] Therefore, in this work we study the synthesis of fluorescein derivatives through Friedel-Crafts reaction using the niobium pentachloride as Lewis acid.

For the obtainment of fluorescein derivatives (**1**), the reactions were realized between 2,0 mmols of phenol derivatives (**2**) (substituted in *meta* or *para* position) and 1,0 mmol of phthalic anhydride (**3**), under inert atmosphere of N₂ and heating of 90 °C, using methanesulfonic acid as solvent and 0.25 eq. of NbCl₅. The adducts of fluorescein were obtained in reaction times ranging from 50 to 180 minutes and in yields ranging from 76 to 85% depending of the phenol derivative utilized. The results obtained, showed that the presence of electron-donating groups in the phenolic derivative favor the formation of the fluorescein derivative (**1**), while in the presence of electron-withdrawing groups wasn't observed the formation of products, with recovery of starting materials.



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References: [1] Funabiki, K. et. al. *Journal of Fluorine Chemistry*. **2006**, 124, 257.

[2] Terrassom, V.; Figueiredo, R. M.; Compagne, J. M. *Eur. J. Org. Chem.* **2010**, 2635.