

*Title:* **Synthesis of photofunctional molecules. Photoelectron transfer and bond cleavage study.**

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Photochemical reactions show a great interest in bioengineering applications as they can be selectively activated by light. In this research project photochemical release of different reactive molecules such as carboxylic acids is achieved by bond photocleavage and photoelectron transfer using riboflavin as the photosensitizer.

The study of three different photoreleasable protecting groups was achieved by the irradiation of a N-alkyl-picolinium salt, ethylenediamine tetraacetic acid disodium salt and 1,2-bis-(o-aminophenoxy)ethane- N,N,N',N'-tetraacetic acid dipotassium salt. The experiments were followed by <sup>1</sup>H NMR spectroscopy and UV-Visible measurements leading to a similar rate of schism for the NAP salt and EDTA disodium salt in the reported experiences.

This project attempts to find the best conditions of concentration substrate molecule and riboflavin to obtain the highest rate of bond cleavage. The final goal of this study is to introduce the substrate molecule and the photosensitizer in a vesicle and making it burst by light irradiation due to the increase of osmotic pressure inside the vesicle caused by the molecule bond cleavage.

**Keywords:** Photoelectron transfer, Photoreleasable protecting groups, Photobleaching, Bond cleavage, Riboflavin.