

## New Method for Direct Tetra-Ortho-Fluorination of Azobenzenes: A Study of Starting Materials

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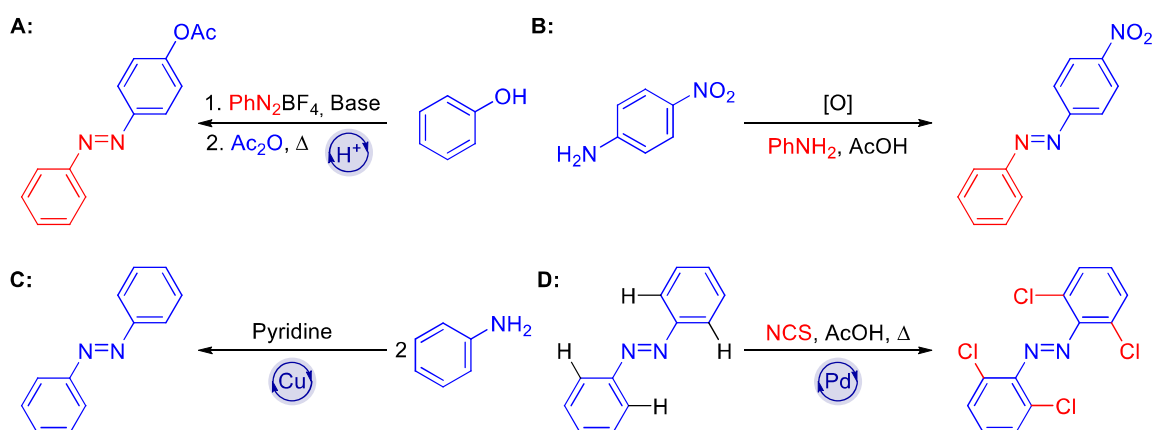
Palavras Chave: Azobenzenes, Photoswitch, Photopharmacology, Fluorination, Electron Withdrawing Groups.

### Highlights

Diverse methods of the synthesis of azobenzenes. Tetrahalogenation Reactions based on C-H Activation.

### Resumo/Abstract

Azobenzene is a class of photoswitch that has great potential in photopharmacology. However, it needs UV light to undergo photoisomerization, not being suitable for biological systems. The introduction of chloro or fluoro groups at the four *ortho* positions ensures red-shifted electronic transitions for azobenzenes which allows for photoisomerization at the visible region of the spectrum. The classical methods for tetra-*ortho*-fluorination are challenging due to multiple step sequences, typically under harsh reaction conditions and the generation of side products. This project aims to enable the synthesis of tetra-*ortho*-fluoro azobenzenes by synthesizing key intermediates through four different synthetic strategies: two for the addition of electron withdrawing groups (**A**, **B**), one for the synthesis of azobenzene (**C**), and its tetrachlorination (**D**). With the materials prepared herein, we expect to provide a new valuable tool for the photopharmacology community.



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