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An Expedient Synthesis of tetra-*ortho*-fluoro-azobenzenes *via* Nucleophilic Aromatic Substitutions (S_NAr)

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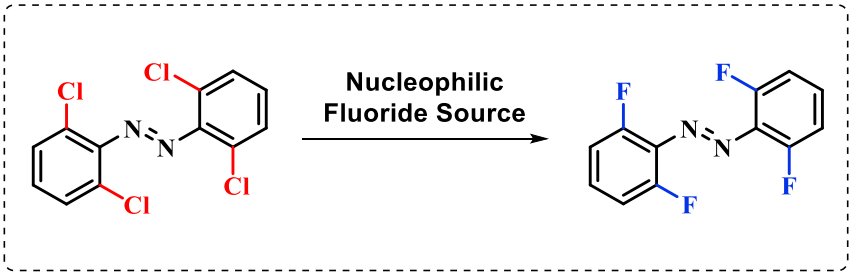
ABSTRACT

The *E* to *Z* photoisomerization of azobenzenes have shown great applicability for the generation of photoswitches, which can be used to prepare chemical probes controlled by light used to study a plethora of biological systems[1].The introduction of four halogens in the positions *ortho* to the azo group allows for the both a red-shift of the $\lambda_{E\rightarrow Z}$ as well as a longer half-life for the Z isomer [2]. In 2016, Trauner and coworkers[3] perfomed the synthesis of tetra-*ortho*-chlorinated azobenzenes using directed C-H activation *via* palladium catalysis. In 2021, Sanford and coworkers[4] used hydrophobic alcohol adducts of fluorides as a source of fluoride anion for S_NAr reactions, allowing for mild reaction conditions that do not require the use anhydrous solvents and reagents. This work uses fluoride-hydrophobic alcohol adducts in S_NAr reactions for the interconversion of tetra-*ortho*-chloro-azobenzenes into their tetra-fluoro counterparts. This methodology allows for a straightforward synthesis of tetra-*ortho*-fluoro-azobenzenes.



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