

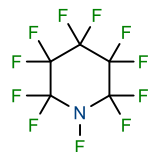
## Historical Development



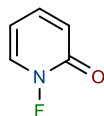
**fluorine gas**  
highly toxic, corrosive,  
reactive gas



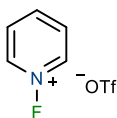
**perchloryl fluoride**  
highly toxic,  
reactive gas



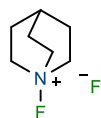
**perfluoropiperidine**  
easily handled liquid,  
low-yielding preparation



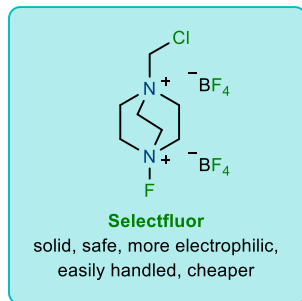
**N-fluoro-2-pyridone**  
solid, non-toxic,  
non-explosive



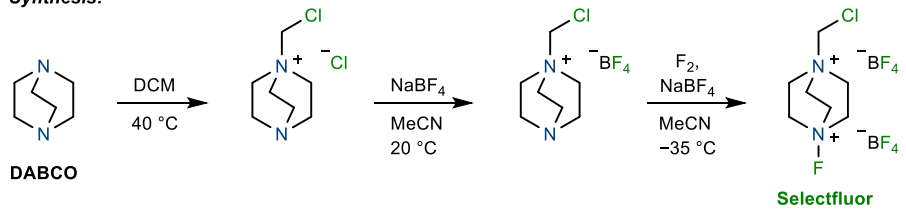
**N-fluoropyridinium**  
solid, non-toxic,  
non-explosive



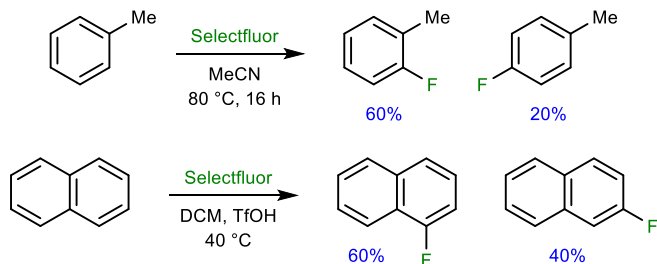
**N-fluoroquinuclidinium**  
solid, safe, more electrophilic,  
hygroscopic



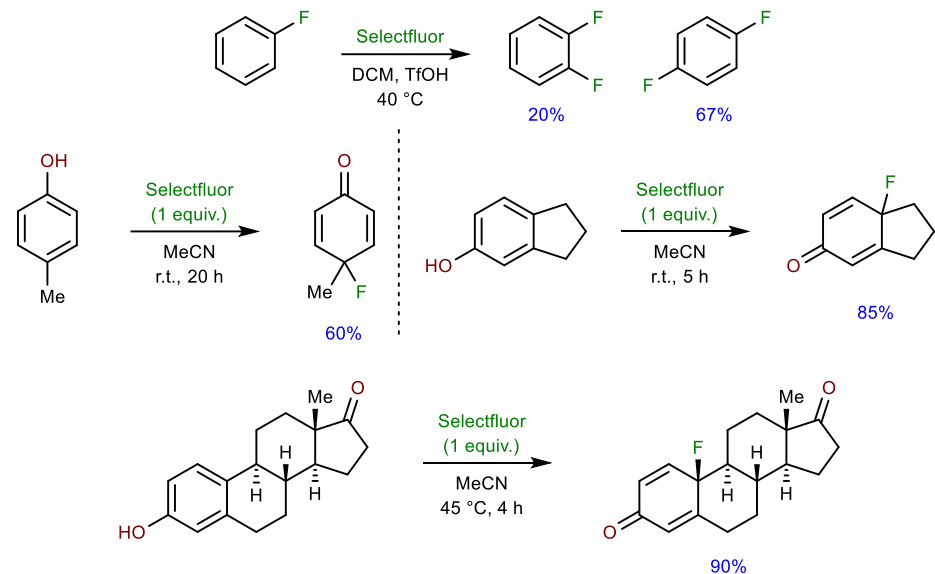
### Synthesis:



## Electrophilic Aromatic Substitution

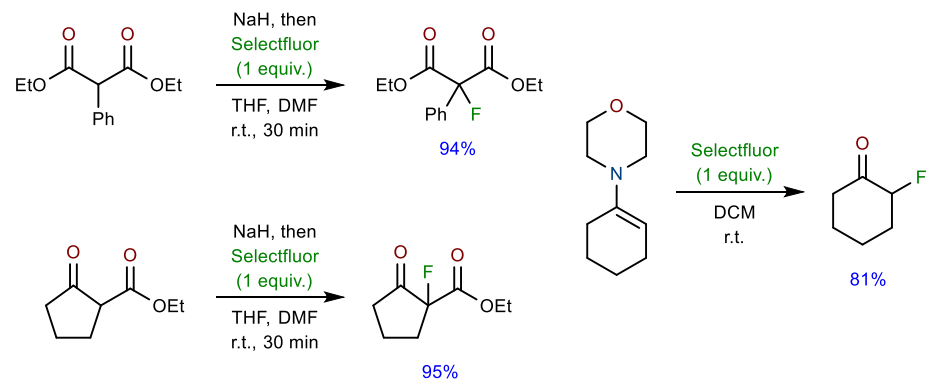


Banks, R. E. *J. Fluor Chem.* **1998**, *87*, 1. [https://doi.org/10.1016/S0022-1139\(97\)00127-9](https://doi.org/10.1016/S0022-1139(97)00127-9)

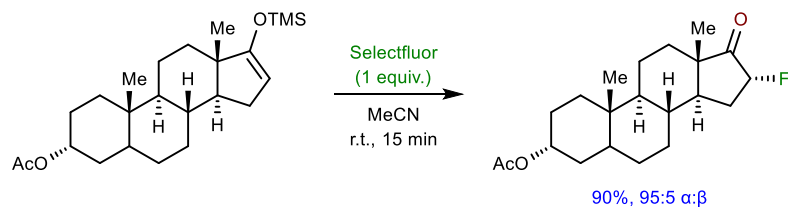
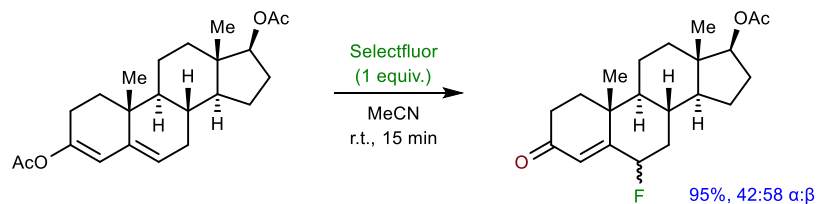


Olah, G. A. *Isr. J. Chem.* **2013**, *39*, 207. <https://doi.org/10.1002/ijch.199900026>  
Stavber, S. *Synlett.* **1999**, *9*, 1375. <https://doi.org/10.1055/s-1999-2840>

## α-Fluorination of Carbonyls

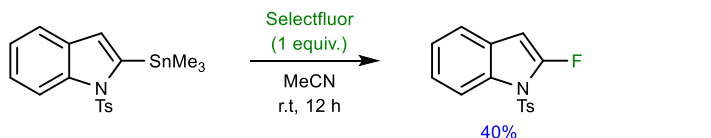
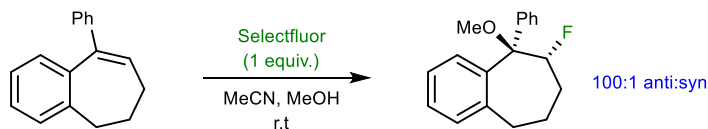
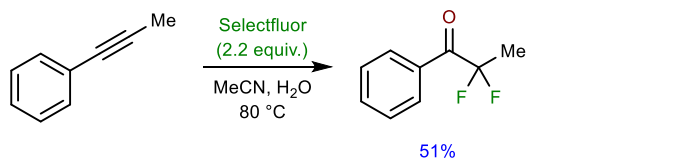
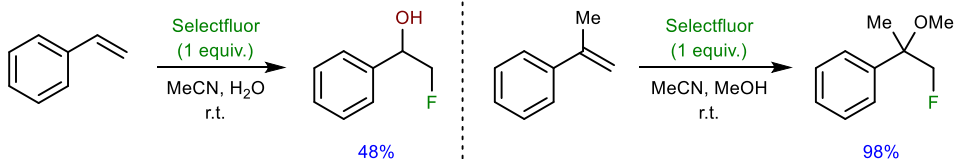


Lal, G. S. *J. Org. Chem.* **1993**, *58*, 2791. <https://doi.org/10.1021/jo00062a023>  
Banks, R. E. *J. Chem. Soc., Chem. Commun.* **1992**, *8*, 595.  
<https://doi.org/10.1039/C39920000595>

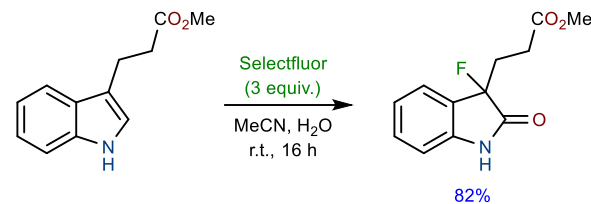
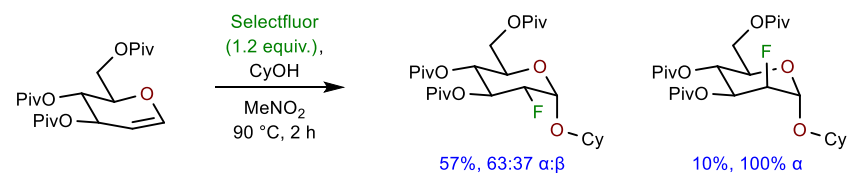


Banks, R. E. *J. Chem. Soc., Chem. Commun.* **1992**, 8, 595.  
<https://doi.org/10.1039/C39920000595>

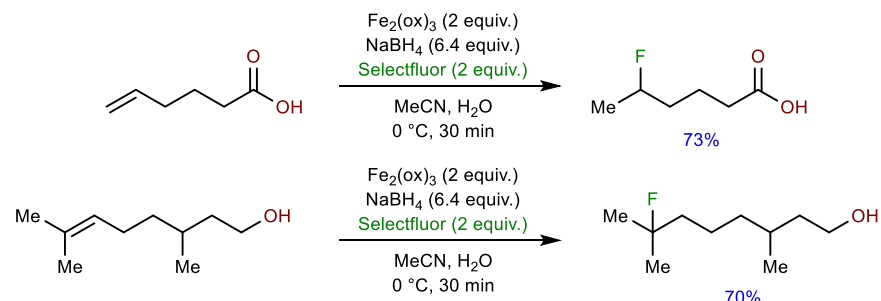
## Olefin Functionalization



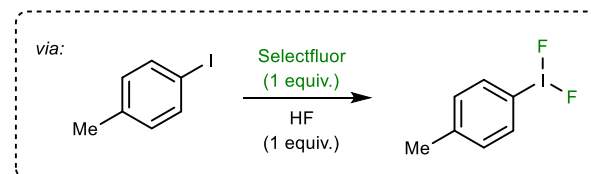
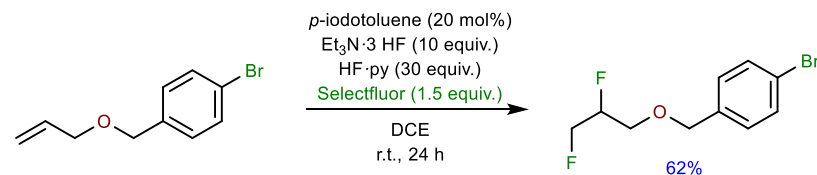
Lal, G. S. *J. Org. Chem.* **1993**, 58, 2791. <https://doi.org/10.1021/jo00062a023>  
Banks, R. E. *J. Fluor Chem.* **1998**, 87, 1. [https://doi.org/10.1016/S0022-1139\(97\)00127-9](https://doi.org/10.1016/S0022-1139(97)00127-9)



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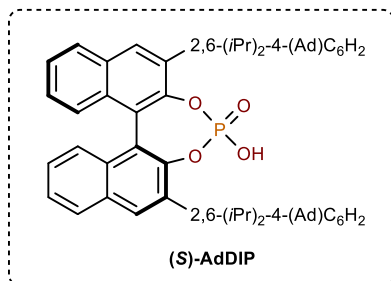
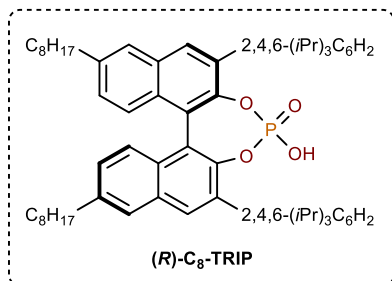
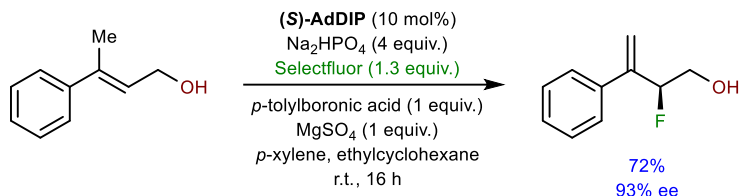
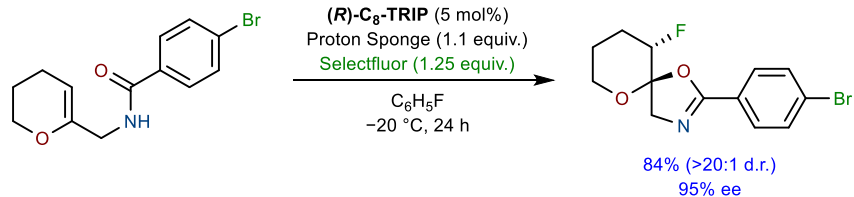


Boger, D. L. *J. Am. Chem. Soc.* **2012**, 134, 13588. <https://doi.org/10.1021/ja3063716>



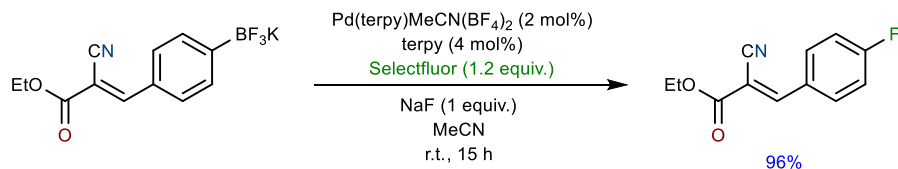
Gilmour, R. *J. Am. Chem. Soc.* **2016**, 138, 5004. <https://doi.org/10.1021/jacs.6b01183>

## Asymmetric Phase-Transfer Catalysis

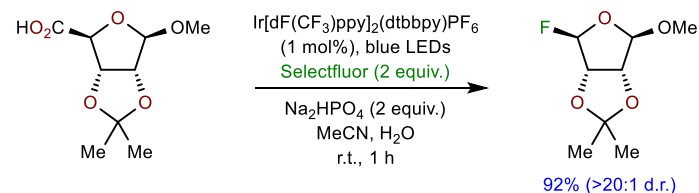
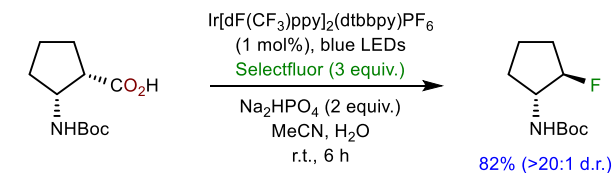
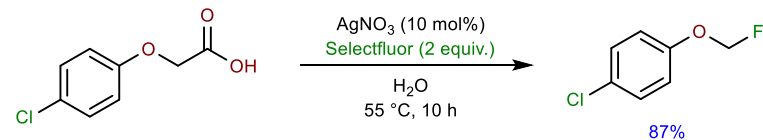
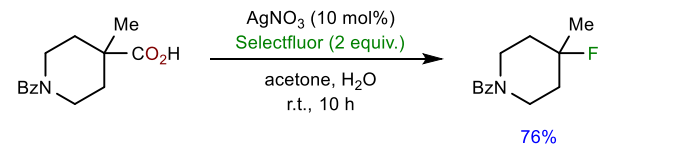


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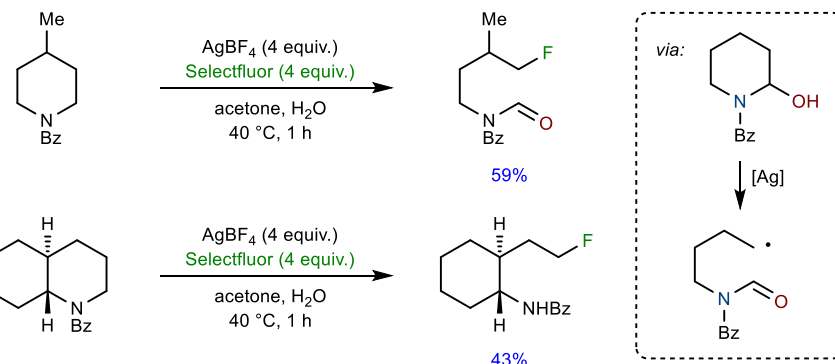
## Miscellaneous Transformations



Ritter, T. *J. Am. Chem. Soc.* **2013**, 135, 14012. <https://doi.org/10.1021/ja405919z>



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