

## OXIDATION OF FLUORINATED ALCOHOLS PROMOTED BY POLYVALENT IODINE REAGENT

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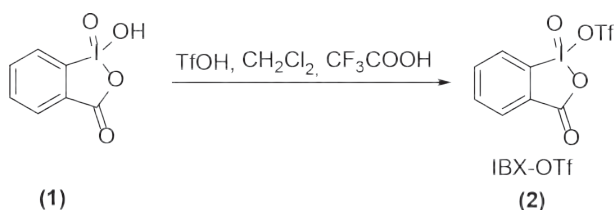
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In recent years, hypervalent iodine reagents have emerged as efficient oxidizing and environmentally friendly reagents for various synthetically useful oxidative transformations [1]. Based on the analogous iodine(III) chemistry, it could be expected that the organosulfonate derivatives of common iodine(V) compounds, such as IBX, are thermally stable compounds which have the potential to become valuable synthetic reagents. It was found out that IBX (1) react with trifluoromethanesulfonic acid with IBX-OTf (2) formation (Scheme 1).



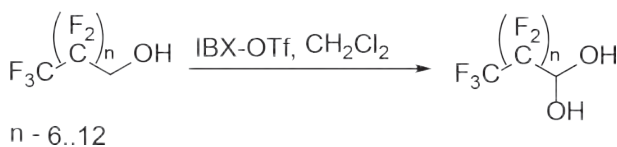
**Scheme 1.** Synthesis of IBX-OTf

The pentavalent iodine heterocycles organosulfonates of 2-iodoxybenzoic acid are powerful oxidants of organic substrates, such as alcohols. We supposed that this reagent is more active in oxidation than IBX-OTs[1].

At the moment oxidation of fluorinated alcohols by polyvalent reagent have not yet been researched. We propose to use triflate derivatives as an oxidation reagent for fluorinated alcohols. First examples of the fluorinated alcohols oxidation based on usage of the new hypervalent iodine(V) reagent IBX-OTf

was shown (Scheme 2). As a result, mixture of initial alcohols and aldehydrols was isolated.

Table 1 represents amounts of aldehydrols in the isolated mixture, which were calculated by using NMR spectra. Partial conversion of substrate connected with bad solubility of initial alcohols in dichloromethane. This explains a drop in product yield with the increase of molecular weight of the starting compound and a corresponding solubility decrease (Table 1).



**Scheme 2.** Oxidation of fluorinated alcohols

**Table 1.** Oxidation of fluorinated alcohols

| n  | Aldehydrol amounts in mixture, % | Yield of aldehydrols, % |
|----|----------------------------------|-------------------------|
| 6  | 89                               | 71                      |
| 8  | 77                               | 57                      |
| 10 | 76                               | 61                      |
| 12 | 3                                | 10                      |

In future, we plan to carry out these reactions in more suitable solvent and to try to obtain more soluble derivatives of fluorinated alcohols and aldehydrols.

### References

- Zhdankin V.V. *Hypervalent Iodine Chemistry: Preparation, Structure and Synthetic Applications of Polyvalent Iodine Compounds, First Edition, 2014.* – John Wiley & Sons, Ltd.
- Yusubov M.S., Svitich D.Yu., Yoshimura A., Nemykin V.N., Zhdankin V.V. // *Chem. Commun.*, 2013.– 49.– 11269.