Hypervalent Iodine for $\alpha,\alpha$-Dihalogenation

**Chlorination:**

Selected examples:

- $\text{Br}ClCl\text{OR}_2$ 87% yield
- $\text{O}_2\text{N}ClCl\text{OR}_2$ 67% yield
- $\text{TsO}ClCl\text{OR}_2$ 89% yield

**Fluorination:**

Selected examples:

- $\text{Br}F\text{ClCl}\text{OR}_2$ 66% yield
- $\text{O}_2\text{N}F\text{ClCl}\text{OR}_2$ 79% yield
- $\text{TsO}F\text{ClCl}\text{OR}_2$ 74% yield

**Significance:** Functionalization at the $\alpha$-position of carbonyls represents one of the most versatile and useful types of transformations in organic chemistry. In this paper, the authors describe the use of a hypervalent iodine species to doubly halogenate the $\alpha$-position of esters with either chlorine or fluorine.

**Comment:** While the chlorination procedure was shown to be broadly functional group tolerant, the need for BF$_3$·OEt$_2$ in the case of fluorination limits the possible functionality in the starting material. The authors report that substrates with labile moieties such as OMe or NHAc decompose upon heating with BF$_3$·OEt$_2$. 