Direct Difluoroethylation of Heteroaromatics, Michael Acceptors and Thiols

**Significance:** A novel protocol for direct difluoroethylation of a broad range of heterocycles, Michael acceptors and even thiols with sodium difluoroethylsulfinate (DFES-Na) has been described. DFES-Na is shown to be compatible with various sensitive functional groups, reacts site-selectively in high conversion and is easy to handle.

**Comment:** Interestingly, performing the reaction with DFES-Na and tert-butylhydroperoxide (TBHP) solely results in only traces of the desired product. Only after addition of stoichiometric amounts of ZnCl₂ and TsOH·H₂O, the product is obtained in high yield.

**Selected examples:**

- 
  ![Example 1](image1)
  - CO₂Me
  - 92% yield

- 
  ![Example 2](image2)
  - 58% yield

- 
  ![Example 3](image3)
  - 44% yield

- 
  ![Example 4](image4)
  - 67% yield

- 
  ![Example 5](image5)
  - 51% yield

- 
  ![Example 6](image6)
  - 83% yield

- 
  ![Example 7](image7)
  - 66% yield

- 
  ![Example 8](image8)
  - 83% yield

- 
  ![Example 9](image9)
  - 56% yield

---

**SYNFACTS Contributors:** Paul Knochel, Andreas K. Steib

**Published online:** 16.05.2013

**DOI:** 10.1055/s-0033-1338732; **Reg-No.:** P05113SF