K. TAKAI*, K. NITTA, K. UTIMOTO (KYOTO UNIVERSITY, JAPAN)
Simple and Selective Method for Aldehydes (RCHO) → (E)-Haloalkenes (RCH:CHX) Conversion by means of a Haloform-Chromous Chloride System

**The Takai Olefination: Simple Access to E-Alkenyl Halides**

In 1986 Takai and co-workers developed a simple procedure for the stereoselective preparation of E-alkenyl halides from various aldehydes by using an excess of CrCl₂ together with a haloform. The selectivity was dependent on the corresponding haloform and decreased in the order Cl > Br > I.

**Comment:** The mild reaction conditions enable highly chemoselective transformations. Thus, the olefination of an aldehyde proceeds smoothly in the presence of ketone moieties. Given the unique chemo- and stereoselectivity, several modifications and improvements of this method have been published over the years.

**Selected examples:**

- **I**
  - 87% yield
  - **E/Z** = 94:6

- **Cl**
  - 76% yield
  - **E/Z** = 94:6

- **I**
  - 76% yield
  - **E/Z** = 89:11

- **Br**
  - 55% yield
  - **E/Z** = 89:11

**Competition experiments:**

- **Cl**
  - 55% yield
  - **E/Z** = 92:8

- **Br**
  - 73% yield
  - **E/Z** = 81:19

- **I**
  - 75% yield
  - 51% yield

**Significance:** In 1986 Takai and co-workers developed a simple procedure for the stereoselective preparation of E-alkenyl halides from various aldehydes by using an excess of CrCl₂ together with a haloform. The selectivity was dependent on the corresponding haloform and decreased in the order Cl > Br > I.