Ion-Exchange-Resin-Supported Hydrogen Fluoride for Fluorination Reactions

**Significance:** A solid anhydrous hydrogen fluoride-equivalent reagent (A26-HF) was prepared by treatment of ion-exchange resin with HF gas (eq. 1). A26-HF was used as a source of HF in the hydrofluorination of alkenes (eq. 2), the ring-opening fluorination of aziridines (eq. 3), and a fluoro-Prins reaction (eq. 4) to give a variety of fluorinated products in up to 89% yield.

**Comment:** The ion-exchange-resin-supported hydrogen fluoride was applied to the flow hydrofluorination of 3-methylbut-3-en-1-yl benzoate to give 3-fluoro-3-methylbutyl benzoate in 92% NMR yield. In a thermostability test, only a 2 wt% loss of HF was detected when A26-HF was exposed to air at room temperature for 30 hours.

**Selected examples:**

- **(2)**
  - R = CF₃, 73% yield
  - R = NO₂, 85% yield

- **(3)**
  - R = OMe, 77% yield (31:1)
  - R = H, 64% yield

- **(4)**
  - R = H, 89% yield
  - R = NO₂, 82% yield
  - R = CN, 71% (cis/trans = 53:1)