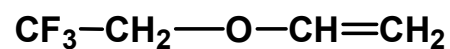
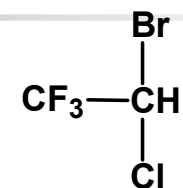




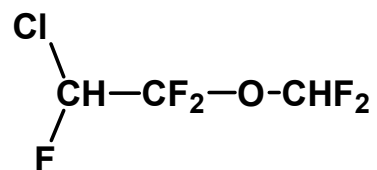
Volatile General Anesthetics



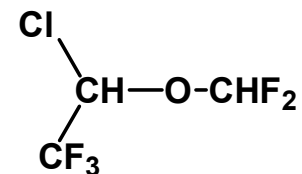
Fluroxene
Anaquest 1960



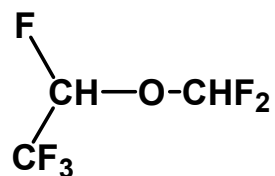
Halothane
ICI 1956



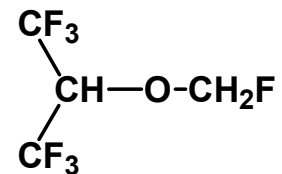
Enflurane
Anaquest, 1972



Isoflurane
Anaquest, 1981



Desflurane
Anaquest, 1992



Sevoflurane
Abbot, 1994



Physical Properties of Volatile Fluorinated Anesthetics

	Halothane	Enflurane	Isoflurane	Desflurane	Sevoflurane
Molecular Weight	197.5	184.5	184.5	168.0	200.0
Boiling Point (°C)	50.2	56.5	48.6	23.5	58.6
Blood/Gas Partition Coefficient	2.35	1.91	1.4	0.42	0.63

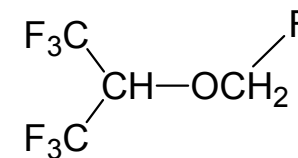
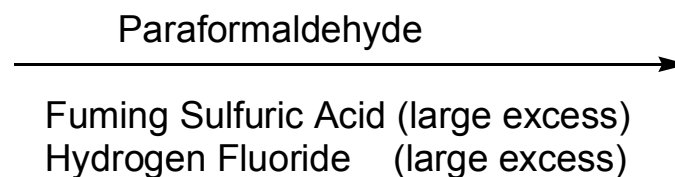
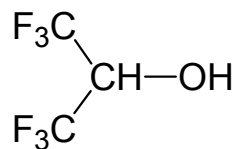
Our Products





One-Step Sevoflurane Synthesis

HFIP
Hexa**F**luoro**I**so**P**ropanol



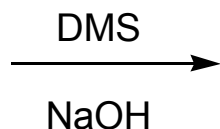
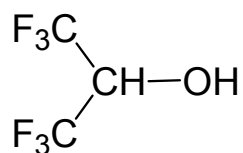
Sevoflurane

US Patent 4,250,334 (1981)

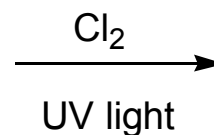
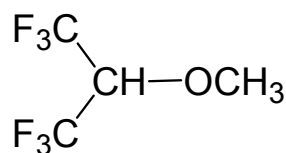
US Patent 4,469,898 (1984)

Baxter 3 Step Sevoflurane Synthesis

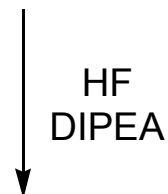
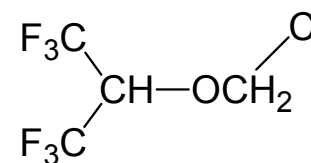
HFIP
HexaFluoroIsoPropanol



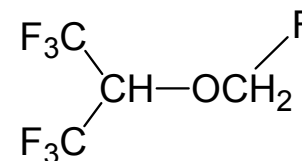
SME
Sevoflurane Methyl Ether



Chlorosevo

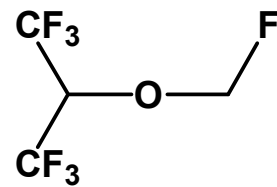
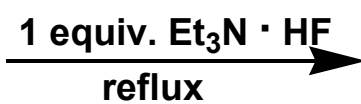
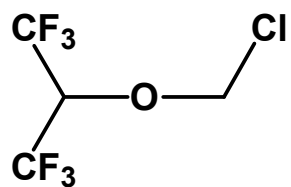


Sevoflurane



J. Fluorine Chem. **2001**, 111, 11-16.

U.S. Patent 5,886,239

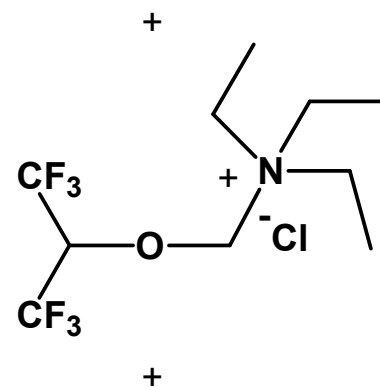


Sevoflurane
79% distilled

HF/SbCl₅



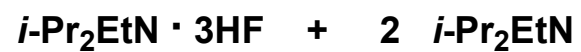
???



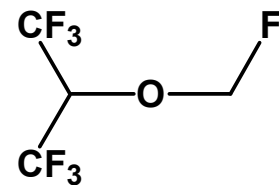
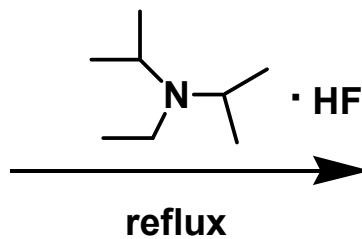
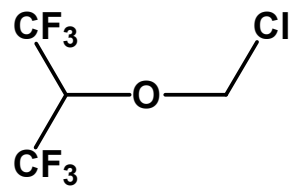
4 ~20%
solid residue

Et₃N · HCl

solid residue



R. Franz *J. Fluorine Chem.* **1980**,
15, 423.



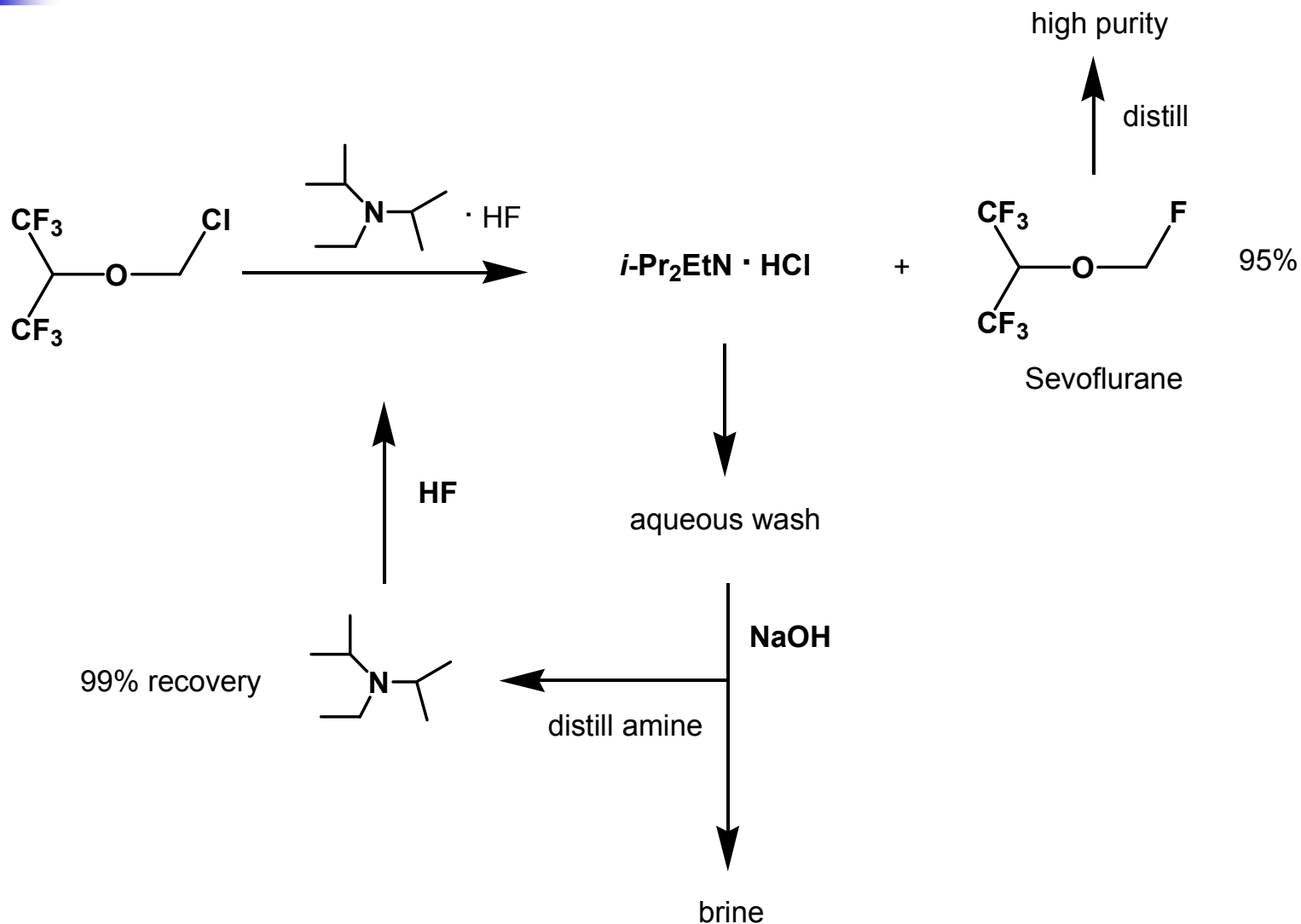
Sevoflurane
95%

+



soluble
in reaction mixture

Waste Minimizing Synthesis of Sevoflurane U.S. Patent 5,886,239



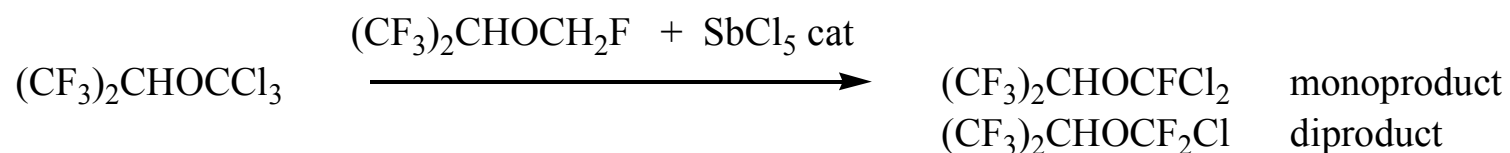
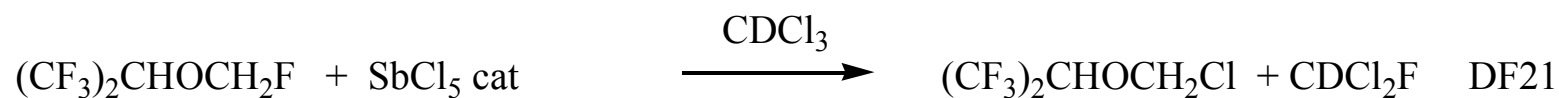


Sevoflurane as a Fluorinating Agent



Chlorosevo bp 78 °C

Sevoflurane bp 58 °C

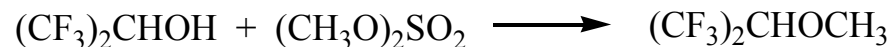
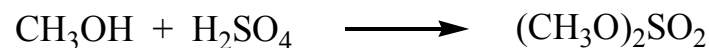
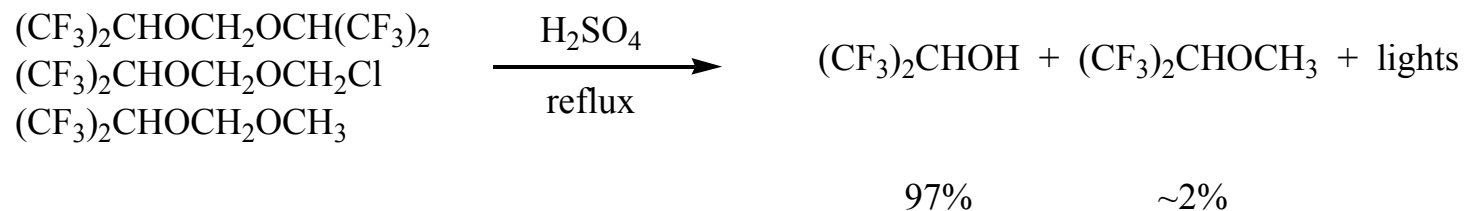
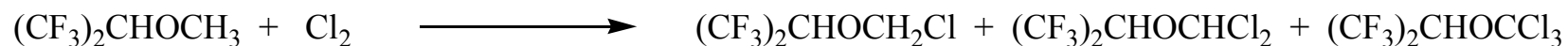


Equiv. sevoflurane	Equiv. SbCl ₅	Yield mono	Yield di
1	0.1	72%	0%
2	0.1	6%	85%



Regeneration of HFIP

US Patent 6,987,204 (2006)





Acknowledgements

Linus Kudzma, Ph.D.
Ralph Lessor, Ph.D.
Grand Huang, Ph.D.
Keith Ramig, Ph.D.