A Efficient Approach to gem-Difluorocyclopropylstannanes via Highly Regio- and Stereoselective Hydrostannation of gem-Difluorocyclopropenes and their Unusual Ring-Opening Reaction to Afford β-Fluoroallylic Alcohols

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2b-trans

[Chemical structure image]
DFILE CH2OBn CH2OBn 13C.ais
COMNT auto
DATIM Sat Mar 23 20:14:47 2013
CNMUC 13C
EXMOD BCM
QFREQ 100.40 MHz
QFBST 125.00 KHz
QFBST 10500.00 Hz
POINTER 32768
FREQU 27118.64 Hz
SCANS 640
ACQTM 1.2083 sec
PO 1.7920 sec
PMT 6.20 usc
IRNUC 1H
CTEMP 22.10 C
SLVNT CDCL3
EXREF 77.00 ppm
BF 0.10 Hz
RGAIN 24
The image contains a chemical structure with the following components:

- **2d-trans**
  - Two fluorine atoms (F) are bonded to the carbon atoms.
  - A hydrogen atom (H) is bonded to the carbon atom.
  - The structure is bonded to a SnBu3 group.

- **3d-trans**
  - Two fluorine atoms (F) are bonded to the carbon atoms.
  - A hydrogen atom (H) is bonded to the carbon atom.
  - The structure is bonded to a Bu3Sn group.

The diagram also includes a spectrum chart with chemical shifts and peak assignments.
2d-trans

3d-trans
\[ \text{NC} \quad \text{F} \quad \text{F} \quad \text{SnBu}_3 \quad 2e\text{-trans} \]

\[ \text{H} \quad \text{Bu}_3\text{Sn} \quad 3e\text{-trans} \]
2e-trans

+ 

3e-trans
$\text{Me} \quad \text{H} \quad \text{SnBu}_3 \quad 2f^{-} \quad \text{trans}$

$\text{Me} \quad \text{H} \quad \text{SnBu}_3 \quad 2f^{-} \quad \text{cis}$

$\text{Ph} \quad \text{Me} \quad 1H \quad \text{als}$
2g-trans

+ 

2g-cis
$\text{Ph} \text{CH}_2\text{OBn}$

$\text{H} \quad \text{SnBu}_3$

$\text{2g-trans}$

$+ \quad \text{H} \quad \text{SnBu}_3$

$\text{2g-cis}$
The diagram shows the nuclear magnetic resonance (NMR) spectrum of a compound with the following structure:

**2h-trans**

- Two fluorine (F) atoms are attached to the carbon atom.
- A phenyl (Ph) group is attached to the carbon atom.
- A SnBu3 group is attached to the carbon atom.

**2h-cis**

- Two fluorine (F) atoms are attached to the carbon atom.
- A phenyl (Ph) group is attached to the carbon atom.
- A SnBu3 group is attached to the carbon atom.
$$\text{BnOH}_2\text{C}_3\text{SnBu}_3$$

**2j-trans**

$$+$$

$$\text{BnOH}_2\text{C}_3\text{SnBu}_3$$

**2j-cis**