

107
LIF**CH₂Si****Silylidene**
Methylenesilylene**C_{2v}**

State	\tilde{X}^1A_1	\tilde{A}^1A_2	\tilde{B}^1B_2
Energy [eV]	0.00	1.876	3.634
$r_0(\text{Si}=\text{C})$ [Å]	1.706(5)	1.873(2)	1.815(5)
$r_0(\text{C}-\text{H})$ [Å]	1.099(3)	1.099(5)	1.073(4)
$\theta_0(\text{H}-\text{C}-\text{H})$ [deg]	114.4(2)	113.9(3)	133.7(1)
Reference	[1]	[2]	[1]



Silylidene and silylidene- d_2 were produced in a pulsed-jet discharge using tetramethylsilane and tetramethylsilane- d_{12} as precursors. The $\tilde{B}^1B_2 - \tilde{X}^1A_1$ transition was studied by laser-induced fluorescence [1]. The electronically forbidden $\tilde{A}^1A_2 - \tilde{X}^1A_1$ transition was observed by LIF and stimulated emission pumping (SEP) techniques [2]. Molecular structures for the three electronic states were deduced from the rotational constants.

[1] Harper, W.W., Waddell, K.W., Clouthier, D.J.: J. Chem. Phys. **107** (1997) 8829.

[2] Smith, T.C., Evans, C.J., Clouthier, D.J.: J. Chem. Phys. **118** (2003) 1642.