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Adsorption and thermal decomposition of 1,3-disilabutane on the Si(001)2×1 surface

B.J. Baik^{*,**}, J.H. Oh^{***}, T.S. Yang^{*}, H.-G. Jee^{****}, K.-S. An^{*}, Y. Kim^{*},
C.-Y. Park^{***} and S.-B. Lee^{****}

*Thin Film Materials Laboratory, Korea Research Institute of Chemical Technology

**Department of Physics, Sungkyunkwan university

***Surface Analysis Laboratory, Korea Research Institute of Standards and Science

****Department of Physics, Sungkyunkwan university

In recent years, many researchers have looked for useful single molecular precursors to effectively grow thin films of silicon carbide. 1,3-disilabutane ($\text{H}_3\text{Si}-\text{CH}_2-\text{SiH}_2-\text{CH}_3$), which we employed, has been considered as a good single precursor based on its appropriate stoichiometry of silicon and carbon. In this study, the initial adsorption mechanism of 1,3-disilabutane on the clean Si(001)2×1 surface and its thermal decomposition process to form the SiC layers have been investigated by synchrotron radiation photoemission spectroscopy.