

## Adsorption of Pentacene( $C_{22}H_{14}$ ) on Si (100)-2x1 by Using NEXAFS and PES

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Pentacene absorption on Si (100)-(2x1) surface at 340 K was investigated by using photoemission spectroscopy (PES) and near edge X-ray absorption fine structure (NEXAFS) at the carbon K-edge. The C 1s core-levels of pentacene adsorbates were consisted of two different components, which is represented carbon atoms with or without a direct Si-C bond. The observed intensity ratio of two components is 1.4 at the monolayer, indicating that the pentacene adsorbates exist mostly as the model of tetra dimer structure<sup>(1)</sup>. NEXAFS spectra indicated that pentacene molecules were predominately physisorbed the layer by layer mode on Si(100)-2x1 surface for multilayer coverage, whereas pentacene molecules were chemisorbs on Si (100)-(2x1) surface for monolayer. Adsorption angle of pentacene molecules was calculated through  $\pi^*$  transition. The angle between the double bond and the silicon surface of  $\sim 50^\circ$ ,  $65^\circ$  and  $76^\circ$  at monolayer, 2L and 4L, respectively.

### [References]

1. D. Choudhary et al. Surface Science **578**, 20 (2005).
2. J. Stöhr et al. Physical Review B **36**, 7891 (1987).