

**NEXAFS and Photoemission Spectroscopy Study for O-Phthalaldehyde (OP) molecule on the H-terminated Si(001) Surface.**

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The organic layers and lines on silicon surfaces has been very interesting research subject with scientific point of view as well as technological point of view. The hybrid between the organic materials and the silicon surface provides pathways of the molecular electronics.

1D self-directed line growth through radical chain reactions is particular interest since the line growth could provide the connecting wire in molecular devices and the patterning of molecular nano scale devices.

Density functional calculation tells that O-Phthalaldehyde (OP) grows self-directly 1D molecular lines on the H-terminated Si(001) surface. The bonding mechanism between Op molecule and Si surface atoms is studied using Near Edge X-ray Fine Structure (NEXAFS) and photoemission spectroscopy.