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Thermal desorption study of 1-pentanol and neopentyl alcohol on clean Si(100)-2×1

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The thermal behavior of 1-pentanol and neopentyl alcohol on clean Si(100) surface have been investigated with thermal desorption spectroscopy(TDS) and low energy electron diffraction(LEED).

Bitzer already shows that all alcohols chemisorb on Si(100) with the formation of alkoxy and Si-H species, using high resolution electron energy loss spectroscopy(HREELS) and low energy electron diffraction(LEED).

We observe that the pentoxy species decomposes about 520K on clean Si(100) surface via γ -hydrogen elimination reaction to yield 1-pentene in the gas phase. However, the neopentoxy species decomposes above 520K on clean Si(100) surface via competing processes to yield mainly isobutene, together with neopentane in the gas phase.