

## Photoelectron Spectroscopy Study of Pyridine Adsorption on Ge(100)

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The pyridine molecule turns out to possess a dative bonding configuration with the down dimer atom of Ge(100), maintaining its aromaticity. That is one of good examples showing that the heterocyclic aromatic molecules can be utilized for possible molecular electronic conductors on two dimension. This situation has been characterized well by STM and theoretical calculation studies before. Here such a dative bonding configuration is confirmed by synchrotron-based photoelectron spectroscopy. The N 1s and C 1s core level spectra respectively reveal distinct binding energies for the dative bonding configuration. However, as the pyridine exposure increases, additional features at low binding energy side in the C 1s and N 1s spectra show up. The new features correspond to a sigma-bonding configuration with Ge-N and Ge-C linkages. Consequently, it suggests that the di-sigma bonded cycloadducts coexist with Ge N dative-bonding products for the final configuration with high density of pyridine on the Ge(100).