

STM/STS study on confined electronic states of glycine/Cu(111) supramolecular nanoporous structure

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Formation and control of the novel low-dimensional structures and their electronic properties, by using self-assembled structure of organic molecules, is one of the goals of our current researches [1,2]. As a step, we have performed scanning tunneling microscopy/spectroscopy (STM/STS) study on the self-assembled monolayers of the simplest amino acid, glycine molecules, formed on a Cu(111) surface. All STM/STS measurements were performed at 5 K using an electrochemically sharpened tungsten tip ($\phi = 0.3$ nm).

As shown in Fig. 1, adsorbed glycine molecules formed nanoporous structures with a unit of glycine trimers. Although the area surrounded by six trimers (A) is a bare Cu surface like the outside substrate (B), STS results measured on both surfaces showed a complete difference from each other for the bias voltages of $V_s > -0.4$ V. The electronic structures observed for the nanoporous area indicated the formation of a quantum confinement structure on Cu(111). Details of the results and the ability of the structure as a template for fullerene molecules will be discussed at the conference.

<http://dora.bk.tsukuba.ac.jp>

References

- [1] K.Kanazawa *et al.*, Phys. Rev. Lett., **99**, 216102 (2007).
- [2] K.Kanazawa *et al.*, J.Am. Chem. Soc., **129** 740 (2007).

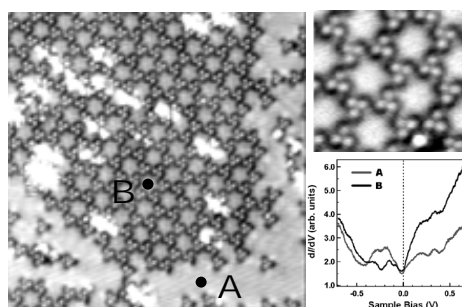


Fig. 1 STM/STS results on glycine /Cu(111) molecular structure