

Abstract Submitted  
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**Conductive probe AFM investigation on monolayer films of colloidal CdSe quantum dots** ITARU KAMIYA, Toyota Technological Institute, ICHIRO TANAKA, Wakayama University, RISA WADA, Wakayama University, MASAYO ARIMOTO, Wakayama University, KAZUYUKI UNO, Wakayama University, TOMOHIRO HAYASHI, Tokyo Institute of Technology, MASAHIKO HARA, Tokyo Institute of Technology — The opto/electronic properties of single quantum dots (QDs) have attracted much attention due to their potential for applications to various future devices. We have been employing conductive probe AFM for measuring quantized energy levels of single QDs prepared by colloidal synthesis [1]. In contrast to measurements on QDs prepared by MBE [2], a difficulty we suffered was interaction between the probe and the colloidal QDs. We have shown that the use of conductive CNT tips can prevent such problems [3]. Here, we show that the use of monolayer films of close-packed colloidal QDs allows us to perform stable conduction measurements even with standard probes. Thin films of 1-2nm of Ti followed by 20nm of Pt were sputtered on Si(001) substrates, whereon monolayer CdSe QD films were prepared by horizontal adsorption. The nearly close-packed QDs are stably attached to the substrate, enabling us to perform local conduction measurement using AFM without tip-QD interaction. We report the film formation, and the conduction features due to the single QDs. [1] I.Tanaka, *et al.*, Surf.Sci. **532-535**, 801 (2003). [2] I.Tanaka, *et al.*, Appl.Phys.Lett. **74**, 844 (1999). [3] I.Tanaka, *et al.*, Jpn.J.Appl.Phys. **44**, L249 (2005).

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