

Abstract Submitted  
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**Adsorption structure analysis of co-adsorption dye-sensitized solar cells by the NEXAFS and XPS** MITSUNORI HONDA, MASATOSHI YANAGIDA, LIYUAN HAN, National Institute for Materials Science, NIMS TEAM — Adsorption structures of N719 dye alone and a N719+D131 co-adsorption system on a TiO<sub>2</sub> electrode were studied with the objective of increasing the efficiencies of dye-sensitized solar cells (DSCs). However, adsorption structure of isothiocyanate (R-N=C=S) in the alone and co-adsorption system was not completely understood because the surface morphology about nanocrystalline TiO<sub>2</sub> is complex. Therefore, we have investigated the adsorption structure on nanocrystalline TiO<sub>2</sub> surface using the Sulfur K absorption edge (S K-edge) and core level (S 1s) in details by using the near edge X-ray absorption fine structure (NEXAFS) and X-ray photoelectron spectroscopy (XPS), respectively. To consider the co-adsorption effect on DSCs, we analyze the depth profiling by the angle dependent NEXAFS spectroscopy and the chemical state on top of surface by the XPS analysis. As the results, we can determine the electronic structure around S atom in R-N=C=S in N719 on nanocrystalline TiO<sub>2</sub> surface. We clarify the adsorption structure of alone and co-adsorption system from the S K-edge NEXAFS and S 1s XPS analysis. I will talk about these results in my presentation.

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