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Abstract:

We observed the electronic states of Au/TiO_2 (320) interface using second harmonic generation (SHG) method. The SHG intensity as a functions of the azimuthal angle and polarization of Au/TiO_2 (320) interface and bare TiO_2 (320) has been obtained. When using 1064 nm as an incident light, we found isotropic behavior from the both samples. But using 532 nm, we found anisotropic response from both too but different behavior. For Au deposited TiO_2 (320) sample, the Pin-Pout SHG pattern showed an anisotropy to the [$2\bar{3}0$] direction. This anisotropic response with 532 nm excitation from the stepped Au/TiO_2 (320) interface, indicated that the electronic resonance of the Au covered step was detected in the ultraviolet region, particularly at 266 nm of SHG light. This electronic resonance may be responsible for many catalytic reactions.