

Title:	Observation of Second Harmonic Generation of the Stepped Au/TiO ₂ (320) Interface
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Published Conference Name:	11th International Symposium on Atomic Level Characterizations for New Materials and Devices '17 (ALC'17)
Type of Publication:	International Conference
Volume:	Issue
Publisher:	
Publication Date:	December 2017
ISSN:	
DOI:	
URL:	
Other Related Info.:	Pages. 326-331





Abstract:

A gold thin film with the thickness of 2nm on the TiO₂ (320) substrate has been fabricated in a UHV chamber at the pressure of 2x10-7 Torr. We observed second harmonic response from the Au/TiO₂ (320) interface and bare TiO₂ (320) as a function of the rotation angle around the surface normal by using of a pulsed Nd2+:YAG laser as the excitation light at the photon energy of 1.17 eV and 2.33 eV. Isotropic response was observed from both samples for 1.17 eV photon energy excitation. In contrast, anisotropic response was observed from both samples for 2.33 eV photon energy excitation. From the Au/TiO₂ (320) interface, anisotropic structure of SHG response was observed in the [2 30] direction for Pin/Pout polarization combination. Nonlinear susceptibility elements were decomposed and two groups of them were assigned as the main contribution from the step and terrace of the vicinal TiO₂ surface.

