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A Novel Approach of Inducing Photoconductivity on GaN Thin Films Grown on Au Surfaces PHADINDRA WAGLE, AARON AUSTIN, ELENA ECHEVERRIA, PUNYA MAINALI, NATHAN DICE, ALEX BIAS, DAVID MCLLROY, Oklahoma State University — Gallium Nitride(GaN) thin films were deposited on pristine and Au sputtered Si<100>substrates by Atomic Layer Deposition(ALD). Photocurrent response of these GaN thin films were studied using 430nm, 505nm, and 660nm. The GaN thin films grown on pristine Si substrate were found to be responsive to aforementioned wavelengths whereas the GaN thin films grown on Au sputtered Si substrate did not show any photo-response. Interestingly, it was observed that growing layer of SiO₂ on top of Au film leads way to photo responsive GaN. The photoresponse of these GaN thin films are believed to be originated from lattice mismatching between Si and GaN, where defects drive the photoconductivity. Moreover, X-ray photoelectron spectroscopy(XPS), X-ray diffraction(XRD), Scanning Electron Microscopy(SEM) were used to study stoichiometry, chemical bonding and morphology of the samples.

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