Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Ellipsometry Study on Intrinsic Optical Properties of Epitaxial Aluminum JUNHO CHOI, FEI CHENG, PING-HSIANG SU, The University of Texas at Austin, SHANGJR GWO, National Tsing-Hua University, XIAOQIN LI, CHIH-KANG SHIH, The University of Texas at Austin, THE UNIVERSITY OF TEXAS AT AUSTIN COLLABORATION, NATIONAL TSING-HUA UNIVERSITY COLLABORATION — Aluminum has attracted attention as a promising material for plasmonic applications. The interest in aluminum plasmonics is due to the higher plasma frequency than that of noble metals such as gold or silver, allowing for surface plasmon resonance to appear in the ultraviolet (UV) region. In order to optimize the performance of Al plasmonic nanostructure, it's important to reduce ohmic and scattering losses of surface plasmons by minimizing the structural imperfections. Here, we incorporated spectroscopic ellipsometry (SE) to report the intrinsic optical properties of epitaxial Al thin film on Si developed to minimize such losses. Accurate dielectric function of single-crystalline Al has been missing because of the limitation of optical method for chemically synthesized, single- crystalline Al nanoparticles. In this work, our epitaxial Al film allowed us to measure the intrinsic dielectric constants of it by SE and such information would be significantly useful for theoretical and experimental study of single-crystal aluminum plasmonic applications.

Junho Choi
The University of Texas at Austin

Date submitted: 08 Nov 2016 Electronic form version 1.4