

Abstract Submitted  
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**Detection and characterization of semiconductor thin film domains in non linear nearfield regime**<sup>1</sup> FARBOD SHAFIEI, The University of Texas at Austin, TOMMASO ORZALI, ALEXEY VERT, SEMATECH, MICHAEL DOWNER, The University of Texas at Austin — High carrier mobility in III-V semiconductor films is attractive for electro-optic devices based on Si substrate. The mismatch between thin film and substrate crystal creates defects that affect electron transport in the film. Optical nonlinear (second harmonic generation) technique has been used in search of domains and boundaries that might have connection to these defects. Fiber based nonlinear nearfield scanning optical microscope (NSOM) was used to detect sub-micron domains at surfaces of the films. This local nearfield optical information was compared with bulk farfield optical information and suppression of the domains was observed and studied by controlling the substrate-film interface. Anti phase boundaries, strain, local charge and cavities in connection with these domains are under study.

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