



UNM SPIE and OSA Student Chapters Presents

Recent Success on SLS FPAs and MDA's New Direction for Development

By

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Over the past few years, the Missile Defense Agency Advanced Technology Directorate (MDA/DV) has funded the development of a new III-V infrared (IR) sensor material: type II strained layer superlattice (SLS). Infrared sensors are crucial to missile defense capabilities for target acquisition, tracking, discrimination and aim point selection; they serve other military sensing applications as well. Most of current infrared military systems use mercury cadmium telluride (HgCdTe), a II-VI semiconductor material, for long-wavelength (LW) (8-12 μm) focal plane array (FPA) applications. HgCdTe has difficulty in achieving large format FPAs at LW due to its low operability and yield. The situation is aggravated by the limitation of the small CdZnTe substrates. SLS is the only IR material so far that has a theoretical prediction of higher performance than HgCdTe. Over the past three years, SLS technology has progressed significantly, demonstrating experimentally the potential as a strong candidate for future high-performance IR sensor materials. In this presentation, we will discuss the most recent progress made in SLS. We will also discuss MDA's new direction for this technology development. The plan is to use a horizontal integration approach instead of adhering to the existing vertical integration model. This new horizontal approach is explored to increase the number of industrial participants working in SLS, and leveraging the existing III-V semiconductor foundries. Hopefully it will reduce the cost of technology development and foundry maintenance.

Biography: Dr. Meimei Tidrow holds the highest technical rank ST (Senior Technical Professional) in US government at the Army Night Vision Lab. She is an internationally recognized expert in infrared material, detector and focal plane array technology. She is the Chief Scientist at NVESD for FPAs. Prior to joining NVESD, Dr. Tidrow was an ST at the Missile Defense Agency (MDA) serving as the Technical Advisor to the Director of the Advanced Technology and the Program Manager for the Passive EO/IR Program. Prior to MDA, Dr. Tidrow was a Research Physicist at the Army Research Lab. She has extensive experience in III-V infrared material and device research. She has published more than 100 journal and conference papers, as well as one book chapter and 4 patents. She has given more than 70 invited talks, seminars and colloquiums in the infrared technology area. She is a Military Sensing Symposia (MSS) Fellow and SPIE Fellow.

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