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Study of On-Si GeSn Gain Spectrum and Amplified Spontaneous Emission ZAIRUI LI, Electro-Optics Program, University of Dayton, Dayton, OH 45469, JAMES GALLAGHER, Department of Physics, Arizona State University, Tempe, AZ, IMAD AGHA, Electro-Optics Program and Department of Physics, University of Dayton, Dayton, OH 45469, JOS MENNDEZ, Department of Physics, Arizona State University, Tempe, AZ, JOHN KOUVETAKIS, Department of Chemistry and Biochemistry, Arizona State University, JAY MATHEWS, Electro-Optics Program and Department of Physics, University of Dayton, Dayton, OH 45469 — Molecules (from 2-20 μm) and atmospheric transmission (transmission windows of 3-5 μm and 8-13 μm) can experience strong characteristic vibrational transitions at mid-infrared spectral region. Which attract many researches on developing Mid Infrared lasers play an important role on spectroscopy, materials processing, chemical and biomolecular sensing, security and industry. The recent success in epitaxial growth of GeSn on-Si brings new development path on Mid Infrared. Si-based laser could also dramatically reduce costs for telecom components. High-performance computing will require advances in technology, and optical interconnects are one key component to increasing computing power. In this presentation, experimental results of amplified spontaneous emission of optical pumped GeSn waveguides within the IR range, will be presented to show a promising further of developing on-Si Mid Infrared laser. We will also show an experimental characterization of Ge and GeSn optical gain spectrum with pump probe system. This will help further understanding the material properties about optical emission of Ge and GeSn alloy leads to an enhancement and add progress on the development of on-Si GeSn Infrared laser.

Zairui Li
Electro-Optics Program, University of Dayton, Dayton, OH 45469

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