

Abstract Submitted  
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**MBE Growth and Structural Characterization of Si-SiO<sub>x</sub>-Si Films** RYAN COTTIER, Texas State University, WEERASINGHE PRIYANTHA, NADER ELMARHOUMI, RAVI DROOPAD, TERRY GOLDING — Since the idea of a Si-SiO-Si superlattice was first proposed, two main groups have been associated with investigations of Si-SiO-Si superlattices - Tsu<sup>i</sup> and Lockwood<sup>ii</sup>. Both groups have synthesized Si-SiO-Si structures on the technologically important Si (100) orientation. Lockwood has demonstrated visible light emission using photoluminescence (PL), and Tsu has demonstrated visible light emission using both electroluminescence and PL. The results of both groups show that the light emission can be tuned via quantum confinement within the Si quantum wells. We present the initial stages of an investigation into the synthesis and utility of Si-O layers as barriers. TEM and depth profiling XPS are presented as evidence of the crystalline growth of Si on ultrathin SiO<sub>x</sub> layers.

[1] R. Tsu, Nature **364**, 19 (1993).

[2] Z. H. Lu, D. J. Lockwood and J. M. Barlbeau, Nature **378**, 258(1995).

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