

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**The Optical Properties of Germanane** PATRICK ODENTHAL, WALID AMAMOU, DANTE O'HARA, Univ of California - Riverside, LUYI YANG, W. D. RICE, SCOTT CROOKER, National Magnetic Field Laboratory, Los Alamos National Laboratory, ROLAND KAWAKAMI, Univ of California - Riverside, The Ohio State University — Hydrogenated 2D germanium, known as germanane (GeH), is predicted to be a direct bandgap semiconductor with high electron mobility ( $\sim 10^4$  cm<sup>2</sup>/Vs) and circularly polarized optical selection rules. However, very little experimental work on the optical properties of germanane has been reported to date. Here, we present temperature-dependent photoluminescence (PL) and photoluminescence excitation spectroscopy (PLE) data on several-layer germanane grown by Molecular Beam Epitaxy (MBE). We observe a broad PL band that is Stokes-shifted by hundreds of meV below the predicted direct bandgap of 1.53 eV. The PL intensity increases by several orders of magnitude upon decreasing the temperature from room temperature to 4K.

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Date submitted: 14 Nov 2014

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