

Abstract Submitted
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Raman and electronic transport characterization of few- and single-layer-thick α -RuCl₃ BOYI ZHOU, ERIK HENRIKSEN, Washington Univ — The layered magnetic semiconductor α -RuCl₃, having a honeycomb lattice of spin-1/2 moments, has been identified as a potential candidate material to realize the Kitaev quantum spin liquid. In particular, bulk RuCl₃ crystals have been studied and found to be on the cusp of manifesting QSL behavior [1]. As the QSL is primarily a two-dimensional phenomenon, and since the layers of RuCl₃ are weakly coupled, we propose to create and study a 2D spin-1/2 honeycomb system by isolating single sheets. Here we report the exfoliation of RuCl₃ down to few- and single-layer-thick samples, which we characterize by Raman spectroscopy and atomic force microscopy at room temperature. We will also report our progress on measurements of basic electronic transport properties in the 2D RuCl₃ system by controlling the chemical potential via gating in a field-effect configuration. [1] A. Banerjee et al, Nature Materials **15**, 733 (2016).

Boyi Zhou
Washington Univ

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