

for the MAR16 Meeting of
The American Physical Society

Transport and Raman signatures of electron-doped SmNiO₃ thin films Koushik Ramadoss, School of Materials Engineering, Purdue University, West Lafayette, IN 47907, NIRAJAN MANDAL¹, Department of Physics, Purdue University, West Lafayette, IN 47907, YOU ZHOU, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138, YONG CHEN², Department of Physics, Purdue University, West Lafayette, IN 47907, SHRIRAM RAMANATHAN, School of Materials Engineering, Purdue University, West Lafayette, IN 47907 — We report low temperature transport and Raman spectroscopy measurements of electron-doped SmNiO₃ (SNO) thin films. It has been shown that pristine SNO films can be doped with electrons using hydrogen. Our transport measurements indicate a Coulomb interaction dominated variable range hopping (VRH) for electron-doped samples whereas the pristine films show a Mott type VRH mechanism at low temperatures. The electron-doped samples display a strong localization which can be correlated with the high spin state of Ni²⁺ ions. The spatial Raman map shows a remarkable shift of about 167 cm⁻¹ with electron doping thus serving as a spectroscopic tool to investigate hydrogen in our films. **References**

1. J. Shi, Y. Zhou and S. Ramanathan, Nat. Commun **5**, 4860 (2014)
2. Jikun Chen *et al.*, Appl. Phys. Lett. **107**, 031905 (2015)

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