

Abstract Submitted
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High Hydrostatic Pressure (0.5-2.5 GPa) Synthesis of Rare-Earth Nickel Oxides $RNiO_3$ ($R=La_{1-x}Y_x$)¹ SARA IRVINE, HOLLAND FIELDING, QUINN D.B TIMMERS, GREGORIO PONTI, JOHN T MARKERT, University of Texas at Austin — We are interested in the rare-earth nickel oxides and investigating their electronic properties by using a hot press synthesis. Materials are first prepared by an ambient solid-state reaction (950C), creating mixed-phase $RNiO_x$ materials. A hot piston-cylinder press, which can range from 5-25kbar at high temperatures (950C-1000C), is then used to search for new phases using either an oxidizer ($KClO_4$) or pure, as it is naturally reducing [1][2]. We are studying nickelate phases, specifically $RNiO_3$ ($R=La_{1-x}Nd_x$), for the metal-insulator transition. We are also looking into how the size of the rare-earth metal could affect when this transition occurs. Currently, we are still working to get a pure phase sample, but have recently seen some success. [1] Luke G. Marshall, Ph. D. Thesis, The University of Texas at Austin, pp. 80–104 (2003). [2] G. Démazeau et al., J. Solid State Chem. 3, 582 (1971)

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