The Crystal Growth and Structure and Property relationships of Pr-Ni-Ga Phases

Jasmine N. Millican[a], D.P. Young[b], M. Moldovan[b], Julia Y. Chan[a], [a]*Department of Chemistry, Louisiana State University, Baton Rouge, LA, USA.* [b]*Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA, USA*. E-mail: jmilli1@lsu.edu

Single crystals of two new ternary compounds, Pr_2NiGa_{10} and Pr_2NiGa_{12} were synthesized by flux methods. Single crystal X-ray diffraction data were collected and structures were solved for Pr_2NiGa_{10} and Pr_2NiGa_{12}. Pr_2NiGa_{10}, which crystallizes in a tetragonal space group *I*4/*mmm*, Z = 2, with the lattice parameters: a = 4.2330 (4) and c = 26.364 (3), R_{factor} = 2.71%, was found to be isostructural to Ce_2PdGa_{10}.[1] Pr_2NiGa_{12}, which crystallizes in tetragonal space group *P*4/*nbm*, Z = 2, with the lattice parameters: a = 6.0080(7) and c = 15.454(3), R_{factor} = 4.2%, was found to be isostructural to Ce_2PdGa_{12}.[2] The structure, transport, and magnetic properties of these compounds will be compared to other Ln_2PdGa_{10} (*Ln* = La, Ce) and Ln_2PdGa_{12} (*Ln* = La, Ce) phases.

[1] Millican J. N., Macaluso R. T., Young D. P., Moldovan M., Chan J. Y., *J. Solid State Chem.*, 2004, **177**, 4695-4700. [2] Macaluso R. T., Millican J. N., Lee H., Nakaatsuji S., Carter B., Nelson M., Fisk Z., Chan J.Y., 2005, *in preparation*.

Keywords: Pr-Ni-Ga phases, structural features, physical properties