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**Investigating the Structure of  $\text{La}_2\text{CuGa}_{12}$ , Using Neutron Powder Diffraction** JASMINE MILLICAN, National Institute of Standards and Technology, JUNG YOUNG CHO, JULIA CHAN, Louisiana State University, JUDITH STALICK, National Institute of Standards and Technology — Single crystals of a new phase,  $\text{La}_2\text{CuGa}_{12}$ , have been synthesized using flux growth. Preliminary single crystal X-ray diffraction results suggest  $\text{La}_2\text{CuGa}_{12}$  to be isostructural to  $\text{Ce}_2\text{PdGa}_{12}$  and crystallize in the  $P4/nbm$  space group with lattice parameters of  $a \sim 6.179 \text{ \AA}$  and  $c \sim 15.384 \text{ \AA}$ . Residual electron density, which was observed in the Fourier difference map of the single crystal X-ray diffraction data, and the observation of satellite peaks in the data are indicative of the possibility of statistical disorder in  $\text{La}_2\text{CuGa}_{12}$ . In addition, unusual behavior of thermal parameters for an additional Ga position is observed in the X-ray diffraction data of  $\text{La}_2\text{CuGa}_{12}$ . Although a preliminary model has been constructed using single crystal X-ray diffraction experiments, due to the two electron difference between  $^{29}\text{Cu}$  and  $^{31}\text{Ga}$ , neutron powder diffraction experiments may be a more suitable probe in accurately determining the structure and site occupancy of the additional Ga atom in  $\text{La}_2\text{CuGa}_{12}$ . We have employed neutron powder diffraction (BT-1) to investigate the structure in the phase,  $\text{La}_2\text{CuGa}_{12}$ .

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