

Abstract Submitted
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Structure and electronic properties of the $\text{Ln}_{n+1}\text{Ni}_n\text{O}_{2n+2}$ layered nickelates KONSTANTIN LOKSHIN, University of Tennessee, VIKTOR POLTAVETS, Michigan State University, MARTHA GREENBLATT, Rutgers University, TAKESHI EGAMI, University of Tennessee — Structures of the recently discovered $\text{Ln}_{n+1}\text{Ni}_n\text{O}_{2n+2}$ ($\text{Ln} = \text{La}, \text{Nd}$) nickelates have infinite NiO_2 layers, similarly with superconducting cuprates. Moreover, due to unusually low Ni valance determined by their structures, Ni^{+2+} atoms possess the same $3d^9/3d^8$ electronic configuration as $\text{Cu}^{2+/3+}$ in cuprates. An important question is whether mimicking the electronic and structural features of cuprates would also result in similar physical properties in nickelates? We have prepared several $\text{Ln}_{n+1}\text{Ni}_n\text{O}_{2n+2}$ phases, including the new ones, in a pure form, which make possible detailed characterization of their structures and properties for the first time. In particular, it was found that resistivity of $\text{Ln}_{n+1}\text{Ni}_n\text{O}_{2n+2}$ is decreasing with the increase of n , revealing a tendency to metallization with the change of doping in NiO_2 layers. Our recent neutron diffraction, resistivity, magnetic and NMR measurements clarifying the nature of the magnetic transition in $\text{La}_4\text{Ni}_3\text{O}_8$ is also discussed. 1. Poltavets V.V. *Am. Chem. Soc.* **2006**, 128, 9050. 2. Poltavets V.V. *Inorg. Chem.* **2007**, 46, 10887. 3. Poltavets V.V. *Phys. Rev. Lett.* **2009**, submitted.

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