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Improved conductivity observed in doped layered oxysulfides $[\mathbf{Cu_2S_2}][\mathbf{Sr}_{n+1}M_n\mathbf{O}_{3n-1}]$ KOICHI USHIYAMA, The University of Tokyo, HIRAKU OGINO, SHIGERU HORII, JUN-ICHI SHIMOYAMA, KOHJI KISHIO — $[Cu_2S_2][Sr_{n+1}M_nO_{3n-1}]$ is a group of semiconducting oxyslfides which are composed of alternate stackings of Cu_2S_2 antifluorite layers and perovskite-based MO_2 planes[1]. Perovskite structures are expected to show interesting properties such as high-temperature superconductivity and magnetoresistance. However they have attracted less attention because they have relatively high resistivity and there are only a few reports of career doping[2]. In this study, we found Na substitution was especially effective on $[Cu_2S_2][Sr_2CoO_2]$. Systematic decreases in lattice parameter with increasing doping levels indicated that Na was successfully substituted at the Sr site. Remarkable decrease in resistivity was observed especially at low temperatures, from 10^3 Ωcm (undoped) to 0.15 Ωcm at 50 K. This value is lowest ever reported in the $[Cu_2S_2][Sr_{n+1}M_nO_{3n-1}]$ oxysulfides. [1] K. Ueda *et al.*, *Chem. Mater.* **13** (2001) 1880 [2] K. Ito *et al.*, *J. Appl. Phys.* **99** (2006) 08F705

Koichi Ushiyama
The University of Tokyo

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