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Crystal structure and physical properties of new layered oxysulfides $(\text{Cu}_2\text{S}_2)(\text{Sr}_4\text{Sc}_2\text{O}_6)$, $(\text{Cu}_2\text{S}_2)(\text{Ba}_3\text{Sc}_2\text{O}_5)$ and $(\text{Cu}_2\text{S}_2)(\text{Ba}_3\text{In}_2\text{O}_5)$ HIRAKU OGINO, KOICHI USHIYAMA, YUKARI KATSURA, SHIGERU HORII, JUN-ICHI SHIMOYAMA, KOHJI KISHIO — Recently high- T_c superconductors were discovered in layered oxypnictide systems with stacking of fluorite-based oxide layers and anti fluorite-based pnictide layers. Materials having similar stacking structure with perovskite-based oxide layers and anti-fluorite chalcogenide or pnictide layers have been discovered in some oxypnictides and oxychalcogenides, but such systems are relatively less explored. Some materials belongs to these systems show interesting properties such as p-type transparent conductivity in $(\text{Cu}_2\text{S}_2)(\text{Sr}_3\text{Sc}_2\text{O}_5)$. This motivated us to explore perovskite-based layered oxysulfide system. New layered oxysulfides $(\text{Cu}_2\text{S}_2)(\text{Sr}_4\text{Sc}_2\text{O}_6)$, $(\text{Cu}_2\text{S}_2)(\text{Ba}_3\text{Sc}_2\text{O}_5)$ and $(\text{Cu}_2\text{S}_2)(\text{Ba}_3\text{In}_2\text{O}_5)$ have been synthesized by conventional solid state reaction. X-ray diffraction patterns show that the structure of these materials consists of stacking of semi-conducting Cu_2S_2 layers and perovskite-based oxide layers. Structural features and physical properties of these new materials will be presented.

Hiraku Ogino
The University of Tokyo

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