

DEPENDENCE OF COMPOSITION OF SUPERCONDUCTOR
ON ELECTRICAL CONDUCTIVITY AND CRYSTAL STRUCTURE

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Ceramic superconductors with high T_c parameter are currently took attention with respect to applications of high power magnet, Josephson device, linear magnetic motor car, and are expected to open the next stage of technology. Final substances and a mechanism for these new superconductors are not yet determined and are now intensively investigated in the world. In a lecture, superconductivity of ceramics of sulfides ($M'MoS_8$) and oxides (YBCO, BSCCO) will be presented on the properties which depend on the composition of atomic elements of the materials, in order to clarify the correlation between the crystal structure and T_c property, mainly for sulfide superconductors.

Sulfides dealt here were Chevrel phase compounds, $M'Mo_6S_8$ ($M'=Cu, Pb, \dots$) $_k$ which contain octahedral Mo_6 cluster in a sulfur cubic cage in a unit cell crystal. Composition of these materials were controlled by an electrochemical intercalation of M' . Control of M' composition gave rise to a deformation of the unit cell of the crystal. Deformation of crystal structure was correlated with a content of M' and T_c .