

Development of Palm Cubic Anvil High Pressure Apparatus.

Yoshiya Uwatoko[1]; Kazuyuki Matsubayashi[1]; Tetsuya Fujiwara[2]; Masato Hedo[3]; Takehiko Matsumoto[1]; Satoshi Tabata[4]; Katsunori Takagi[4]; Masashi Tado[4]; Hiroyuki Kagi[5]

[1] ISSP, Univ. Tokyo; [2] Yamaguchi Univ.; [3] Fac. Sci., Univ. Ryukyus; [4] Sumitomo Heavy Industries Techno-Fort; [5] Geochem. Lab., Grad. School Sci. Univ. Tokyo

<http://uwatoko.issp.u-tokyo.ac.jp/index.html>

Effect of the high pressure study on the physical properties is one of the important experimental methods for the understanding of highly correlated electron systems, in which the pressure-induced attractive phenomena such as superconductivity and magnetically ordered non-Fermi liquid have been observed. Until today, many scientists have developed a lot of high pressure apparatus in order to clarify material properties. Here, we report the development of very small palm cubic high pressure device to measure electrical resistivity etc. An important character in the palm cubic anvil apparatus is a compact body with the small heat capacity, which realizes a measurement at low temperature below 1K. In spite of its small body, we succeeded to generate high pressure up to 8GPa. Although the clamp type was applied to this palm cubic anvil apparatus, its pressure quality was very good and close to hydrostatic. Therefore, this apparatus is appropriate for the measurement of the absolute values of electrical resistivity, magneto-resistance and the Hall coefficient in a wide temperature range between high and low temperature up to 8GPa. The details of our palm cubic high pressure apparatus are argued. Also, some neutron experimental results at room temperature will be discussed.