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Superconductivity in Y_2C_3 SATOSHI AKUTAGAWA, JUN AKIMITSU, Aoyama-Gakuin University — The discovery of superconductivity in MgB_2 revived the enthusiasm of non-oxides materials and initiated a search for novel superconductivity in intermetallic compounds including light elements, B and C. As a part of these researches, we have reported a relatively high-T_c superconductivity in Y_2C_3 at 18 K whose T_c could be changed from 10 K to 18 K by synthesis conditions, although this material with a maximum T_c of 11.5 K has already been investigated by Krupka al.. The crystal structure of Y_2C_3 is a body-cente red cubic (Pu_2C_3-type) s tructure. In this structure, Y atoms are aligned along the <111> direction and C atoms form dimers. We synthesized a high-purity sample of the medium-T_c phase (T_c = 13.9 K) in Y_2C_3 and examined its physical properties in detail. From a specific heat measurement, the superconducting gap is estimated to be 4.50, indicating that the superconductivity in Y_2C_3 can be described by an s-wave strong coupling regime. From specific heat in various magnetic fields, the upper critical field $H_{c2}(0)$ is estimated to be 24.7 T.

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