

Professor T. Takahashi -- Elucidation of Mechanism for Metallic Conductivity in Superconducting Cements --

- Direct observation of free electrons in a cage -

A joint research team led by Professor Takashi Takahashi at WPI Advanced Institute for Materials Research, Tohoku University and Professor Hideo Hosono at Frontier Research Center, Tokyo Institute of Technology has revealed the mechanism how a cement compound made of lime and alumina ($12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ (C12A7)) transforms into a metal and a superconductor. C12A7 is a symbolic material to start the “Element Science and Technology Project” to solve the resource problem of rare-earth metals by developing alternative new functional materials without such rare and harmful elements, but with trivial abundant elements. The present research would serve as a model case and stimulate further innovative researches for new functional materials without rare-earth elements.

The research result was selected as Editor’s Choice in Journal of the Physical Society of Japan, and was published online on September 27, 2010

[Contact]

Assistant Professor Seigo Souma

WPI Advanced Institute for Materials Research, Tohoku University

TEL: +81-22-795-6477, FAX: +81-22-795-3104

E-mail: s.souma*arpes.phys.tohoku.ac.jp (Replace * with @)