SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **PIĄTEK**

24 czerwca 2011 r., o godz. 10:00

w sali 203 (bud. 1) odbędzie się seminarium, na którym

Prof. Sadamichi Maekawa[1,2]

1. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai 319-1195 Japan
2. CREST, Japan Science and Technology Agency, Tokyo 102-0075, Japan

wygłosi referat na temat:

„Seebeck Effect, Spin Seebeck Effect and Spin-Electronics"

In the Seebeck effect, the electric voltage is generated in a conductor placed in a temperature gradient. The efficiency of the effect is given by the density and the scattering of the conduction electrons in usual metals and semiconductors. Recently, the transition metal oxides have attracted much attention as thermo-electric materials. Since the Seebeck effect is due to the entropy carried by the electric current, the spin and orbital degrees of freedom of conducting electrons in the oxides may enhance the Seebeck effect [1]. In the first part of this presentation, the enhanced Seebeck effect is discussed in the transition metal oxides. In the second part, the spin-Seebeck effect is proposed [2], where the spin voltage, i.e., spin accumulation, is generated in a ferromagnet placed in a temperature gradient. Then by utilizing the spin-detection method based on the spin-Hall effect, the spin voltage is converted to the electric voltage [3]. The Spin-Seebeck effect is induced by a pure spin current, a flow of electron spin without electric charge current, and provides a variety of spin-electronics applications [4, 5].

[1] S. Maekawa et al., ***Physics of Transition Metal Oxides*** (Springer, 2004).
[2] K. Uchida et al., Nature ***455***,778(2008) and Nature Materials ***9***, 894 (2010).
[3] ***Concept in Spin Electronics***, ed. S. Maekawa (Oxford University Press, 2006).
[4] H. Adachi et al., APL ***97***, 252506 (2010) and Phys. Rev. B ***83***, 094410 (2011).
[5] J. Ohe et al., Phys. Rev. B ***83***, 165127 (2011).

Serdecznie zapraszamy

Roman Puźniak
Henryk Szymczak
Andrzej Wiśniewski