

**V pondělí dne 8. září 2014 v 10:00 hod.  
ve Fyzikálním ústavu Cukrovarnická v seminární  
místnosti (budova A, 1. patro)**

## Silicon spintronics



**Ron Jansen**

*NIMS, Tsukuba, Japan*

*2014 IEEE Magnetics Society Distinguished Lecturer*

Worldwide efforts are underway to create a revolutionary and energy-efficient information technology in which digital data are represented by the spin orientation of electrons. Implementing spin functionality in silicon, the mainstream semiconductor, has the potential to create broad impact. Remarkable advances in the creation and control of spin polarization in silicon have therefore generated much excitement. This lecture describes spintronics and spin caloritronics in silicon-based devices. It presents the key developments and achievements, our current understanding, as well as the unsolved puzzles and challenges that stimulate researchers in the field.

[1] J.C. Le Breton, S. Sharma, H. Saito, S. Yuasa and R. Jansen, Thermal spin current from a ferromagnet to silicon by Seebeck spin tunnelling, *Nature* **475**, 82-85 (2011).

[2] R. Jansen, Silicon spintronics, *Nature Materials* **11**, 400-408 (2012).

[3] K. R. Jeon, B. C. Min, A. Spiesser, H. Saito, S. C. Shin, S. Yuasa, R. Jansen, Voltage tuning of thermal spin current in ferromagnetic tunnel contacts to semiconductors, *Nature Materials* **13**, 360 (2014).

[4] I.J. Vera-Marun, B.J. van Wees and R. Jansen, Spin heat accumulation induced by tunneling from a ferromagnet, *Phys. Rev. Lett.* **112**, 056602 (2014).