



# SECOND INTERNATIONAL NANOTECHNOLOGY CONFERENCE ON COMMUNICATIONS AND COOPERATION

## Abstract

### **Spintronics – New discovery and application**

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A wide variety of physical phenomena associated with “spin current” and “spin-spin interactions” have been discovered recently thanks to the rapid advancement in materials science and nanotechnology. Such physics would allow for the future development of a new class of “non-charge devices” based solely on spin-properties of materials. Physicists have succeeded in demonstration of the fundamental relation between spin current and magnetic field, which essentially corresponds to the spin version of the Maxwell’s equation. A rapid and rather unexpected advancement in understanding of the nuclear spin current and its entanglement to other quanta such as electronic spins and photons has been achieved. In this talk, I will introduce a variety of newly emerging concepts in the broadly defined field of “spintronics.”