

# Final Report Meeting of MEXT Project: Research and Development of Spintronics Material and Device Science and Technology for a Disaster-Resistant Safe and Secure Society

~For Realization of Disaster-Resistant Computing System and Artificial Intelligence based on Spintronics Technologies ~

Date : Wednesday, February 22, 2017

Venue : Station Conference Tokyo, Sapia Tower 5<sup>th</sup> Floor, 503BCD  
(1-7-12, Marunouchi, Chiyoda-ku, Tokyo)

## Program

10:00	Opening Remarks	Tsuyoshi Enomoto (MEXT)
10:05	Address	Ryoji Chubachi (AIST)
10:10	Overview : MEXT Project	<u>Hideo Ohno (Tohoku University)</u>
10:40	Panel Discussion " Path to the Future – Spintronics Technology – " (90 min)	Moderator: Hideo Ohno, Professor, Tohoku Univ. Panelists: Yoichiro Tanaka, Professor, Yamagata Univ. Junichi Sone, Principal Fellow, CRDS, JST Tetsuo Endoh, Professor, Tohoku Univ.
12:10	Lunch Break (80 min)	
13:30	Development of material and device for super-low power consumption (large-capacity) spintronics working memory (1) • High-performance magnetic tunnel junctions at reduced dimensions	<u>Hideo Sato (Tohoku University)</u> <u>Shoji Ikeda (Tohoku University)</u>
14:00	Development of material and device for super-low power consumption (large-capacity) spintronics working memory (2) • Novel Mn-based perpendicular ferromagnetic materials	<u>Mikihiko Oogane (Tohoku University)</u> <u>Yasuo Ando (Tohoku University)</u>
14:30	Development of material and device for super-low power consumption (large-capacity) spintronics working memory (3) • Low power writing in magnetic tunnel junction using electric-field effect	<u>Shun Kanai (Tohoku University)</u> <u>Fumihiro Matsukura (Tohoku University)</u>
14:50	Development of material and device for advanced (high speed operation) spintronics working memory (1) • Three-terminal spintronics devices	<u>Shunsuke Fukami (Tohoku University)</u> <u>Teruo Ono (Kyoto University)</u>
15:20	Break (15 min)	
15:35	Development of material and device for advanced (high speed operation) spintronics working memory (2) • Materials engineering of spin current generation	<u>Masamitsu Hayashi (NIMS)</u>
15:55	Development of material and device for advanced (high speed operation) spintronics working memory (3) • Measurement and evaluation technics of spintronics materials and devices	<u>Shigeyuki Sato (Toei Scientific Industrial)</u> <u>Tetsuo Endoh (Tohoku University)</u>
16:15	Environmental tolerance evaluation for spintronics material and device • Radiation tolerance of MTJ	<u>Kazuyuki Hirose (JAXA)</u> <u>Yuzuru Narita (Yamagata University)</u>
16:35	Disaster tolerance evaluation of spintronics-based computer systems using a computer simulation (1) • Soft-error tolerance and energy consumption in practical system with MRAM	<u>Tadahiko Sugibayashi (NEC)</u>
16:55	Disaster tolerance evaluation of spintronics-based computer systems using a computer simulation (2) • Re-initialization Free Nonvolatile Processor	<u>Takahiro Hanyu (Tohoku University)</u> <u>Masanori Natsui (Tohoku University)</u>
17:25	Closing Remarks	<u>Tadashi Shibata Program Officer</u>

**Banquet** 18:00~20:00 Station Conference Tokyo, 4<sup>th</sup> Floor, 402CD • Banquet Fee : 7,000JPY

**Sponsors:** **Research Institute of Electrical Communication (RIEC), Tohoku University**  
**Ministry of Education, Culture, Sports, Science and Technology (MEXT)**



【 Contact information 】  
Center for Spintronics Integrated Systems,  
Tohoku University

2-1-1 Katahira, Aoba, Sendai, Miyagi  
TEL : +81-(0) 22-217-6116 E-mail : sien@csis.tohoku.ac.jp  
URL: <http://www.csis.tohoku.ac.jp/>