

*2nd Meeting of Strategic Japanese-German Joint
Research Program*



“ASPIMATT” : Advanced spintronic materials and transport phenomena

October 18th (Mon), 2010

Aoba Memorial Hall, Tohoku University

Opening program

(Chair: Mizukami)

- 9:00 Welcome remarks (Ando)
- 9:05 Welcome remarks (Felser)
- 9:10 Welcome remarks (Prof. Miyano)
- 9:20 Welcome remarks (Hara (JST))
- 9:30 Introductory remarks –Brief Explanation of this project-
(Ando, Felser, Hillebrands, Takanashi)

Previous works and background of this project

- 10:00 Heusler (Felser)
- 10:30 Progress of magnetoresistance effect in MTJs with Heusler alloys (Ando)
- 11:00 Advanced characterization (Hillebrands)
- 11:30 Spintronic properties in ordered alloy systems (Takanashi)

Lunch

Plan and Progress of Each Project

(Chair: Sakuraba)

- 13:00 1.1-A New materials research for high spin polarization (Tezuka)
- 13:25 1.2-A Theory of the electronic and magnetic structure of advanced spintronic materials with emphasis on spectroscopy and properties (Chadov)
- 13:50 1.3-A Investigation of the electronic structure of buried layers and interfaces using high energy photoemission (Fecher)
- 14:15 1.4-B Theoretical studies on spin-dependent transport phenomena in heterostructures based on half-metallic Heusler alloys (Shirai)
- 14:40 1.5-B Direct measurement of spin-injection efficiency and dynamics in model systems for advanced Heusler-based spintronics devices (Cinchetti)

Coffee Break

(Chair: Naganuma)

- 15:30 2.1-A Fabrication and characterization of half-metallic Heusler alloy films with large perpendicular magnetic anisotropy (Mizukami)
- 15:55 2.2-A Half-metallic Heusler alloys combined with L10 ordered alloy films (Sakuraba)
- 16:20 2.3-A New compounds with large perpendicular magnetic anisotropy and for

spin-torque application (Felser)

- 16:45 3.1-A Gilbert damping in half metal Heusler alloy films (Oogane)
17:10 3.3-A Theoretical study of Gilbert damping in half metal Heusler alloy films (Sakuma)

Welcome Party

(Chair: Oogane)

- 18:00 Opening (Takanashi)
Toast (Aeschlimann)
Closing (Sakuma)

October 19th (Tue), 2010

(Chair: Tezuka)

- 9:00 4.1-B Novel devices based on Heusler films with GMR and MTJ nanocontacts (Naganuma)
9:25 4.3-B Lateral spin transport in semiconductors (Matsukura)
9:50 4.5-A Heusler materials for new spin transport applications (Jakob)
10:15 4.6-B Lateral spin transport in Heusler alloy systems (Takanashi)
10:40 4.7-B Nonlinear spin-wave dynamics and radiation properties of small Heusler devices (Serga/Hillebrands)
11:05 Discussion
11:30 Closing remarks

Lunch

Student Session-1

@Aoba Memorial Hall 401, Tohoku University

13:30-13:40 Takahide Kubota- *Opening remarks*

Session 1-1

(Chair: Yusuke Ohdaira)

13:40-13:55 Masaki Endo- *Magnetization reversal in uniaxial (Ga,Mn)As by current induced spin-orbit interaction effective field*

13:55-14:10 Koda Tetsunori- *Mechanism of Enhanced Spin Relaxation Time in Au Nanoparticles*

14:10-14:25 Yoji Kunihashi- *Anisotropic Spin Relaxation due to Crystal Orientation Dependence of Spin-Orbit Interaction in quasi-1D Channel*

14:25-14:40 Thomas Sebastian- *Relevant experimental setups and techniques of the AG Hillebrands*
Relevant experimental setups and techniques of the AG Hillebrands concerning the ASPIMATT project

14:40-14:55 Coffee break

Session 1-2

(Chair: Sumito Tsunegi)

- 14:55-15:05 Takuya Ono- *Spin transfer switching in synthetic free layers under magnetic field along the hard axis*
- 15:05-15:20 Thamrongsin Siripongsakul- *Nanofabrication of gate voltage control spin tunneling devices based on magnetic granular multilayer tunnel junctions*
- 15:20-15:35 Kousuke Fujiwara- *Fabrication of CoFeB/MgO/CoFeB based magnetic tunnel junction for magnetic field sensor*
- 15:35-15:50 Siham Ouadi- *A nondestructive analysis of the B diffusion in Ta-CoFeB-MgO-CoFeB-Ta magnetic tunnel junctions by hard X-ray photoelectron spectroscopy*

15:50-16:05 Coffee break

Sesseion 1-3

(Chair: Kouske Fujiwara)

- 16:05-16:20 Yusuke Ohdaira- *Fabrication of spin-transistor structure with Cr/MgO/Co₂MnSi multilayer and MTJs using Co₂MnSi electrode*
- 16:20-16:35 Kang Jun-Goo- *Ferromagnetic resonance study on FePt thin films with in-plane magnetization using coplanar waveguide*
- 16:35-16:50 Daisuke Ogawa- *Ferromagnetic Resonance Investigation of exchange Coupling in Nd₂Fe₁₄B/ α -Fe Interfaces*
- 16:50-17:05 Husne Ara Begum- *Fabrication of multiferroic Bi(Fe_{0.9}Co_{0.1})O₃ epitaxial films grown on SrTiO₃ (100) substrates*

18:00-20:00 Party @ Sendai

October 20 th (Wed), 2010

Student Session-2

(Chair: Thamrongsin Siripongsakul)

- 9:30- 9:45 Sumito Tsunegi - *Improvement of TMR ratio by modification of Co₂MnSi/MgO interface*
- 9:45- 10:00 Yohei Kota- *First-principles study of electrical conduction in disordered Co₂MnSi*
- 10:00-10:15 Roman Fetzner- *Spin- and angle-resolved photoemission studies of the Heusler compound Co₂FeGa_{0.5}Ge_{0.5}*
- 10:15-10:30 Takayuki Ohma- *Now considering...*

Excursion

11:00- 18:30 @Hiraizumi