The 7th Symposium for the Core Research Clusters for Materials Science and Spintronics and the 6th Symposium on International Joint Graduate Program in Materials Science and Spintronics

Timetable 1 (November 28 - 29)

November 28(Tue)			November 29(Wed)		
Location					
Sakura Hall	AIMR Main Bld 2F Seminar room	Nano Spin 4F Conference room	Sakura Hall	AIMR Main Bld 2F Seminar room	Nano Spin 4F Conference room
			9:00- CRCMS1 Advances in soft materials (CM1-1~3)		
9:40- Opening					
9:45- Plenary1 (Reiko Oda)				10:00- GP-MS1 Student Session 1 Oxide electronics (GM1-1~3)	
10:30- Plenary 2 (Henning Sirringhaus)					
	Break				
11:30- Photo					
	12:00- Lunch Time			12:00- Lunch Time	
13:30- Poster Session1				13:30- GP-MS2 Student Session 2 Porous materials (GM2-1~3)	13:30- CRCMS2 Quantum materials and magnonics (CM2-1~3)
14:15- Plenary3 (Di-jing Huang)					
	Break				Break
15:15- CRC Award talk				Break	15:15- GP-Spin1 Spin-functional materials (GS1-1~4)
	Break				
16:15- Poster Session2				16:00- GP-MS3 Student Session 3 Energy conversion & storage (GM3-1~3)	
18:00- Symposium Reception (Westin Sendai)					

The 7th Symposium for the Core Research Clusters for Materials Science and Spintronics and the 6th Symposium on International Joint Graduate Program in Materials Science and Spintronics

Timetable 2 (November 30 - December 1)

November 30(Thu)			December 1(Fri)		
Location					
Sakura Hall	AIMR Main Bld 2F Seminar room	Nano Spin 4F Conference room	Sakura Hall	AIMR Main Bld 2F Seminar room	Nano Spin 4F Conference room
9:00- CRCMS3 Multi-material design & control (CM3-1~5)	10:00- GP-MS4 Student Session 4 Thermoelectric materials (GM4-1~3)	9:00- GP-Spin2 Spintronics devices (GS2-1~4) Break	9:00- CRCMS4 Advanced carbon-based materials for batteries and sensors (CM4-1~3)	10:00- GP-MS6 Student Session 6 Interface science and engineering of joining (GM6-1~3)	9:00- CRCS4 Invited talk (CS4-1~3) Break 10:50- CRCS5 Invited talk (CS5-1~2)
12:00- Photo	12:30- Lunch Time	13:25- Opening(Spin)		12:00- Lunch Time	
		13:30- Plenary4 (Satoru Nakatsuji)			13:30- CRCS6 Invited talk (CS6-1~2) Break 14:50- CRCS7 Invited talk (CS7-1~2) 15:50- Closing (Spin)
	15:30- GP-MS5 Student Session 5 Theoretical condensed matter physics (GM5-1~4)	14:15- CRCS1 Invited talk (CS1-1~2) Break 15:35- CRCS2 Invited talk (CS2-1~3) Break 17:20- CRCS3 Invited talk (CS3-1~2) 19:00- Banquet (Spin only)	16:30- Poster Award 17:00- Closing		

Program

Plenary sessions

November 28 (Tuesday)

Location: Sakura Hall (E01)

Plenary 1

Chair: Shin-ichi Orimo

9:45-10:30 **Reiko Oda** (University of Bordeaux / CNRS / Tohoku University) 24

PL1 **Transferring chiral information between objects with different dimensions without crystalline order**

Plenary 2

Chair: Takahiko Sasaki

10:30-11:15 **Henning Sirringhaus** (University of Cambridge) 26

PL2 **Transient localization and spin relaxation physics of high mobility organic semiconductors**

Plenary 3

Chair: Hiroshi Kumigashira

14:15-15:00 **Di-Jing Huang** (National Synchrotron Radiation Research Center / National Tsing Hua University) 28

PL3 **Spin and charge excitations of unconventional superconductors probed by high-resolution RIXS**

November 30 (Thursday)

Location: Laboratory for Nanoelectronics and Spintronics 4F conference room (E04)

Plenary 4

Chair: Shunsuke Fukami

13:30-14:15 **Satoru Nakatsuji** (The University of Tokyo) 30

PL4 **Topological magnetic materials for innovative quantum electronics**

Sessions by the Core Research Cluster for Materials Science

November 29 (Wednesday)

CM1: Advances in soft materials Chair: Eriko Nango

Location: Sakura Hall (E01) Kazuo Takimiya

9:00-9:30	**Yizhou Zhang** (Tohoku University)	34
CM1-1	**Tuning nanostructured membranes via lyotropic assembly**	
9:30-10:00	**Thomas P. Russell** (University of Massachusetts Amherst / Tohoku University)	35
CM1-2	**Self-propulsion by directed explosive emulsification**	
10:00-10:40	**Shun Watanabe** (The University of Tokyo)	36
CM1-3	**Charge, spin, and phonon in soft organic semiconductors**	

November 29 (Wednesday)

CM2: Quantum materials and magnonics Chair: Takafumi Sato

Location: Laboratory for Nanoelectronics and Spintronics 4F conference room (E04) Shigemi Mizukami

13:30-14:00	**Yong P Chen** (Purdue University / Aarhus University / Tohoku University)	37
CM2-1	**Spintronics meets quantum materials**	
14:00-14:30	**Hidekazu Kurebayashi** (University College London)	38
CM2-2	**Recent studies of photon-magnon coupling at UCL: nonlinear magnon polaritons and a hybrid between van der Waals magnets and superconducting resonators**	
14:30-15:00	**Elyasi Mehrdad** (Tohoku University)	39
CM2-3	**Many-body magnonic open systems for quantum applications**	

November 30 (Thursday)

CM3: Multi-material design & control Chair: Hidemi Kato

Location: Sakura Hall (E01) Yutaka S. Sato

9:00-9:30	**Eric Jianfeng Cheng** (Tohoku University)	40
CM3-1	**Resolving interfacial contact challenge between garnet electrolytes and ceramic cathodes in solid-state Li metal batteries**	
9:30-10:00	**Hiroki Kurita** (Tohoku University)	41
CM3-2	**Energy-harvesting and mass sensor performances of magnetostrictive $Fe_{30}Co_{70}$ alloy-based clad plates**	
10:00-10:30	**Uceu Fuad Hasan Suhuddin** (Helmholtz Zentrum Hereon)	42
CM3-3	**Welding and joining of dissimilar materials by solid-state joining processes: Bonding mechanism and joint performance**	
10:45-11:15	**Honggang Dong** (Dalian University of Technology)	43
CM3-4	**Vacuum diffusion bonding of TC4 titanium alloy to T2 copper**	
11:15-11:45	**Alexander L. Shluger** (University College London / Tohoku University)	44
CM3-5	**A controversial nature of oxygen vacancies in amorphous oxides**	

December 1 (Friday)

CM4: Advanced carbon-based materials for batteries and sensors Chair: Hirotomo Nishihara

Location: Sakura Hall (E01) Keiichi Tomishige

9:00-9:30	**Olivier Fontaine** (Vidyasirimedhi Institute of Science and Technology / Institut Universitaire de France)	45
CM4-1	**Tackling non-ideal electrochemical behavior for optimal energy storage**	
9:30-10:00	**Liubing Dong** (Jinan University)	46
CM4-2	**Key materials for carbon-based zinc-ion hybrid supercapacitors**	
10:00-10:30	**Chi-Hsien Huang** (Ming Chi University of Technology)	47
CM4-3	**Atomic layered composites of GO/G for biosensor applications**	

Sessions by the International Joint Graduate Program in Materials Science

Location: WPI-AIMR Main Building 2F seminar room (B01)

November 29 (Wednesday)

GM1: Student Session 1 (Oxide electronics) Chair: Jiyang Huang

10:00-10:45	**Kenji Nomura** (University of California, San Diego)	50
GM1-1	**Recent advancement of oxide TFT technology**	
10:45-11:30	**Seung Sae Hong** (University of California, Davis)	51
GM1-2	**Freestanding complex oxide membranes and heterostructures**	
11:30-12:00	**Jiyang Huang** (Tohoku University)	52
GM1-3	**Growth of transitional metal oxide thin films on glass and as freestanding layer toward flexible and transferable oxide thin films**	

November 29 (Wednesday)

GM2: Student Session 2 (Porous materials) Chair: Bowen Tang

13:30-14:00	**Shan Shi** (Hamburg University of Technology)	53
GM2-1	**Nanoporous metals by dealloying - more strength with less material?**	
14:00-14:30	**Jiuhui Han** (Tianjin University of Technology)	54
GM2-2	**Evolution of porosity and phases during vapor phase dealloying**	
14:30-15:00	**Bowen Tang** (Tohoku University)	55
GM2-3	**Effect of grain boundaries on liquid metal dealloying**	

November 29 (Wednesday)

GM3: Student Session 3 (Energy conversion & storage) Chair: Xiatong Ye

16:00-16:45	**Yiqiang Zhang** (Zhengzhou University)	56
GM3-1	**Printed high-performance perovskite solar cells: Ink engineering, interfacial engineering, and charge-carrier kinetics regulation**	
16:45-17:30	**Gennady Cherkashinin** (Technische Universitat Darmstadt)	57
GM3-2	**Understanding interfacial electronic properties as key for efficient materials for energy storage and energy conversion**	
17:30-18:00	**Xiatong Ye** (Tohoku University)	58
GM3-3	**Clarification of side reactions on α-MnO_2 cathode in $Mg[Al(hfip)_4]_2$/ether electrolytes**	

November 30 (Thursday)

GM4: Student Session 4 (Thermoelectric materials)

Chair: Yuyang Zhang

10:00-10:40	**Teruyuki Ikeda** (Ibaraki University)	59
GM4-1	**High-throughput exploration of multicomponent material systems using composition graded materials**	
10:40-11:20	**G. Jeffrey Snyder** (Northwestern University)	60
GM4-2	**Strategies for engineering complex thermoelectric materials**	
11:20-12:00	**Yuyang Zhang** (Tohoku University)	61
GM4-3	**Crystal structures and thermoelectric properties of low-temperature ordered phases of the $Cu_{2-\delta}Te$ compounds**	

November 30 (Thursday)

GM5: Student Session 5 (Theoretical condensed matter physics)

Chair: Shota Namerikawa

15:30-16:05	**Cheol Hwan Park** (Seoul National University)	62
GM5-1	**Magnetic anisotropy and magnetic ordering of transition-metal phosphorus trisulfides**	
16:05-16:40	**Jan M Tomczak** (King's College London)	63
GM5-2	**Transport properties of correlated narrow-gap semiconductors**	
16:40-17:15	**Junfeng Qiao** (Ecole Polytechnique Federale de Lausanne (EPFL))	64
GM5-3	**Automated high-throughput Wannierization**	
17:15-17:30	**Shota Namerikawa** (Tohoku University)	65
GM5-4	**Ab initio electrical conductivity calculations of Ag-Pd alloy based on Wannier-CPA method**	

December 1 (Friday)

GM6: Student Session 6

Chair: Kiyoaki T Suzuki

(Interface science and engineering of joining)

10:00-10:40	**Ke Chen** (Shanghai Jiao Tong University)	66
GM6-1	**Fabricating superamphiphilic surface to enhance the interfacial bonding strength of TC4 and non-polar UHMWPE**	
10:40-11:20	**Sylvain Dancette** (National Institutes of Science and Technology, Lyon)	67
GM6-2	**Ductile fracture in metals revisited by 3D imaging and finite element analysis**	
11:20-12:00	**Kiyoaki T Suzuki** (Tohoku University)	68
GM6-3	**Interfacial microstructure of dissimilar weld of aluminum to steel containing alloying elements and its effect on mechanical properties**	

Sessions by the Core Research Cluster for Spintronics (20th RIEC International Workshop on Spintronics)

Location: Laboratory for Nanoelectronics and Spintronics 4F conference room (E04)

November 30 (Thursday)

CS1

14:15-14:45	**Hang Xie** (National University of Singapore)	70
CS1-1	**Electrical control of magnetic state in non-collinear antiferromagnet Mn_3Sn**	
14:45-15:15	**Gyung-Min Choi** (Sungkyunkwan University)	71
CS1-2	**Optical detection of orbital Hall effect in light metals of Ti, Mn, and Cu**	

November 30 (Thursday)

CS2

15:35-16:05	**Shan Wang** (Stanford University)	72
CS2-1	**Unconventional spin-orbit torques in sputtered materials for high density high speed MRAM**	
16:05-16:35	**Nihal Singh** (University of California, Santa Barbara)	73
CS2-2	**Heterogeneous probabilistic computers for Boltzmann inference and learning**	
16:35-17:05	**Advait Madhavan** (National Institute of Standards and Technology)	74
CS2-3	**CMOS-MTJ circuits for alternative computing**	

November 30 (Thursday)

CS3

17:20-17:50	**Kohei Fujiwara** (Tohoku University)	75
CS3-1	**Topological phenomena in magnetic Weyl semimetal $Co_3Sn_2S_2$ thin films**	
17:50-18:20	**Ping Tang** (Tohoku University)	—
CS3-2	**Spintronic analog in ferroelectric materials**	

December 1 (Friday)
CS4

9:00-9:30	**Johan Åkerman** (University of Gothenburg / Tohoku University)	76
CS4-1	**10 nm spin Hall nano-oscillators and mutual synchronization of thousands of oscillators**	
9:30-10:00	**Tomoyuki Yokouchi** (The University of Tokyo)	77
CS4-2	**Pattern recognition with reservoir computing using magnetic-field induced dynamics of skyrmions**	
10:00-10:30	**Zhaochu Luo** (Peking University)	78
CS4-3	**Electrically programmable nanomagnetic Ising network**	

December 1 (Friday)
CS5

10:50-11:20	**Shutaro Karube** (Kyoto University)	79
CS5-1	**Introduction to altermagnetism and its application**	
11:20-11:50	**Maciej Sawicki** (Polish Academy of Sciences)	80
CS5-2	**Experimental evidences for relativistic effects in altermagnetic hexagonal MnTe**	

December 1 (Friday)
CS6

13:30-14:00	**Kazuya Ando** (Keio University)	81
CS6-1	**Spin and orbital Hall torques**	
14:00-14:30	**Mathias Klaeui** (Johannes Gutenberg University Mainz)	82
CS6-2	**Spin-orbitronics and orbitronics for stochastic computing**	

December 1 (Friday)
CS7

14:50-15:20	**Philippe Talatchian** (Spintec)	83
CS7-1	**Harnessing stochastic properties of spintronic nanodevices for unconventional computing**	
15:20-15:50	**Shun Kanai** (Tohoku University)	—
CS7-2	**Investigation of probabilistic and quantum spin dynamics for unconventional electronics**	

Sessions by the Graduate Program in Spintronics

Location: Laboratory for Nanoelectronics and Spintronics 4F conference room (E04)

November 29 (Wednesday)

GS1: Spin-functional materials

15:15-16:00	**Masayuki Suda** (Kyoto University)	Chair: Takeshi Odagawa	86
GS1-1	**Chiral van der Waals superlattices for novel spintronics without magnet**		
16:00-16:30	**Safeer Chenattukuzhiyil** (University of Oxford)	Chair: Takeshi Odagawa	87
GS1-2	**Spin-charge interconversion in van der Waals heterostructures**		
16:50-17:20	**Masaki Nakano** (The University of Tokyo)	Chair: Tappei Kawakami	88
GS1-3	**Emergent 2D magnetism explored by MBE**		
17:20-17:50	**Tomoyuki Yokouchi** (The University of Tokyo)	Chair: Tappei Kawakami	89
GS1-4	**Giant magnetochiral anisotropy in Weyl-semimetal WTe_2 induced by diverging Berry curvature**		

November 30 (Thursday)

GS2: Spintronics devices

9:00-9:45	**Johan Åkerman** (University of Gothenburg / Tohoku University)	Chair: Shunya Chiba	90
GS2-1	**Spin torque and spin Hall nano-oscillators**		
9:45-10:30	**Philippe Talatchian** (Spintec)	Chair: Shunya Chiba	91
GS2-2	**Magnetic tunnel junctions: from fundamentals to applications**		
10:50-11:20	**Zhaochu Luo** (Peking University)	Chair: Tomohiro Uchimura	92
GS2-3	**Electrically programmable nanomagnetic Ising network**		
11:20-11:50	**Tomosato Hioki** (The University of Tokyo)	Chair: Tomohiro Uchimura	93
GS2-4	**Magnon parametron: a magnonic device with unconventional fluctuation**		

Poster session (Material)

November 28, 13:30-14:15: Poster Session 1 (for odd number posters)

November 28, 16:15-17:00: Poster Session 2 (for even number posters)

Poster session (Spintronics)

November 28, 13:30-14:15: Poster Session 1 (for odd number posters)
November 28, 16:15-17:00: Poster Session 2 (for even number posters)