

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

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 Fe₃₀Co₇₀ 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: Hiroto 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 Universität 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-MnO₂ 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-δ}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: Kiyooki 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	Kiyooki 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 Kläui (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)

PM1	Hongyun Zhang (Tsinghua University / Tohoku University / Frontier Science Center for Quantum Information) Field Tunable flat band in Twisted Monolayer-Bilayer Graphene	96
PM2	Ryuhei Sato (Tohoku University) Persistent homology Analysis of concerted migration of Ag ions in AgI superionic conductor	97
PM3	Jiayan Liu (Tohoku University) Three-dimensional Nanoporous MoS₂ Powder Fabricated by Liquid Metal Dealloying for Lithium-ion Battery Anode	98
PM4	Di Zhang (Tohoku University) Developing Effective Electrocatalysts for Renewable Energy and Environmental Applications	99
PM5	Xue Jia (Tohoku University) Data-Science and AI for Energy Materials Exploration	100
PM6	Bowen Tang (Tohoku University) Effect of Grain Boundaries on Liquid Metal Dealloying	101
PM7	Yui Muto (Tohoku University) Improving the generalization performance of the machine learning model estimating charge states in quantum dots	102
PM8	Huyen Thi Ngoc Vu (Tohoku University) A theoretical study of piezomagnetic effect in Mn₃AN and Mn₃X	103
PM9	Weiqi Liu (Tohoku University) Development of Aluminum-Foil Anodes for High Energy-Density and Low-Cost Rechargeable Lithium Batteries	104
PM10	Kazuma Matsumura (Tohoku University) Transport Property of a Few Quantum Dots Formed in Short Channel GaN FETs	105
PM11	Tomomi Suwa (Tohoku University) Similarity Assessment Between 3D Microstructure and Magnetic Domain of a Tb-diffused Sintered Nd-Fe-B Magnet	106
PM12	Haruki Sanematsu (RIKEN Center for Emergent Matter Science (CEMS)) Multiple Naphthothiophenediimides Accumulated Molecules	107
PM13	Kohsuke Kawabata (Tohoku University / RIKEN CEMS) NIR-absorbing Organic Semiconductors Based on a Naphthodithiophenedione; Impact of the Position of Solubilizing Substituents on Their Solid-state Structures and Properties	108

PM14	Kirill Bulgarevich (CEMS, RIKEN)	109
	Crystal Growth by “Indirect Sublimation” and Formation of Multi-Single-Crystal Films for Practical Applications of Single-Crystal Organic Semiconductors	
PM15	Barun Dhara (CEMS, RIKEN)	110
	Modulation of crystal and electronic structure of MT-Pyrene-based conductive salts by varying counter anions	
PM16	Hiromu Matsuura (Tohoku University)	111
	Effect of off-stoichiometry on elastic moduli of B1-type MX_x ceramics	
PM17	Michitaro Saeki (Tohoku University)	112
	Synthesis and Properties of A Small Bandgap Donor-acceptor π-Conjugated Polymer Incorporating Naphthodifran-2,7-dione	
PM18	Chihana Kudo (Tohoku University)	113
	Segmentation Analysis for Microstructural Characterization of MoSiBTiC Alloy	
PM19	Xiaotong Ma (Tohoku University)	114
	Evaluation of structural characteristics and magnetic properties of ultra-thin high-purity Fe ribbons with and without annealing	
PM20	Likun Chen (Tohoku University)	115
	Effects of Doping Element on Magnetostrictive Properties and Microstructure of Fe-Ga Alloys	
PM21	Terigele (Tohoku University)	116
	Synthesis of titanium based fine powder by using shuttle of the disproportionation and proportionation reactions of titanium ions	
PM22	Qiuyu CHENG (Tohoku University)	117
	Solution process assisted synthesis of YMnO₃-based pigment	
PM23	Chen Qu (Tohoku University)	118
	MOF-818 Catalytic Pyrolysis of Softwood for Chemical Production with Assistance of Microwave	
PM24	Daisuke Shiga (Tohoku University / Photon Factory, IMSS, KEK)	119
	Electronic Structure of Hole-Doped Cr_xV_{1-x}O₂ Epitaxial Films Studied by in situ Photoemission Spectroscopy	
PM25	Chika Takai-Yamashita (Tohoku University / Gifu University)	120
	Sex Determination of Japanese Rhinoceros Beetle Larvae Based on their Dropping Shape using Mahalanobis-Taguchi System (MTS)	
PM26	Linda Zhang (Tohoku University)	121
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PM27	Lewis John Conway (University of Cambridge / Tohoku University)	122
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	Filming microscopic hydrogen diffusion behaviors in metals using an ultrasensitive hydrogenochromic sensor	

PM29	Yuuki Masutake (Tohoku University)	124
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PM31	Hikaru Taneoka (Tohoku University)	126
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PM32	Lei Miao (Tohoku University)	127
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PM33	Yusei Morita (Tohoku University)	128
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PM35	Yibei Xue (Tohoku University)	130
	Tunable Phase Transition Behavior and Excellent Thermochromic Performance of N-doped VO₂	
PM36	Katarzyna Gas (Tohoku University)	131
	Studies of magnetic properties of epitaxial thin films of noncollinear Weyl antiferromagnet Mn₃Sn	
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PM38	Shuto Suzuki (Tohoku University)	133
	Electron-doped kagome superconductor Cs(V_{1-x}Cr_x)₃Sb₅: micro-ARPES study	
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PM43	Qian Chen (Tohoku University)	138
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PM44	Saijian Ajia (Tohoku University)	139
	Electromagnetic microwave absorption properties of Fe/Fe₁₆N₂ nanoparticles from iron oxide	
PM45	Ryotaro Hayasaka (Tohoku University)	140
	Electronic structure of SrNbO₃/SrTiO₃ interface studied by synchrotron-radiation photoemission spectroscopy	
PM46	Chung-Lun Yu (National Taipei University of Technology)	141
	Characterization of CuFeO₂-ZnFe₂O₄ Powder Prepared by Glycine Nitrate Process and Applied on Hydrogen Generation from Steam Reforming of Methanol	

Poster session (Spintronics)

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

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PS2	Motoya Shinozaki (Tohoku University) Wide dynamic range charge sensing utilizing fast feedback control of radio-frequency reflectometry	145
PS3	Ramchandra Sahoo (Tohoku University) Thin-film epitaxy of ferromagnetic semiconductor EuO using pulsed-laser deposition equipped with the fourth harmonic wave of Nd:YAG laser	146
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PS5	Takemi Kato (Tohoku University) Quantum Well States in Alkali-Metal Thin Films Grown on Kagome Metals	148
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PS27	Tappei Kawakami (Tohoku University)	170
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