



PROGRAM OUTLINE

TECHNICAL EXPERTISE

ORGANIZATION

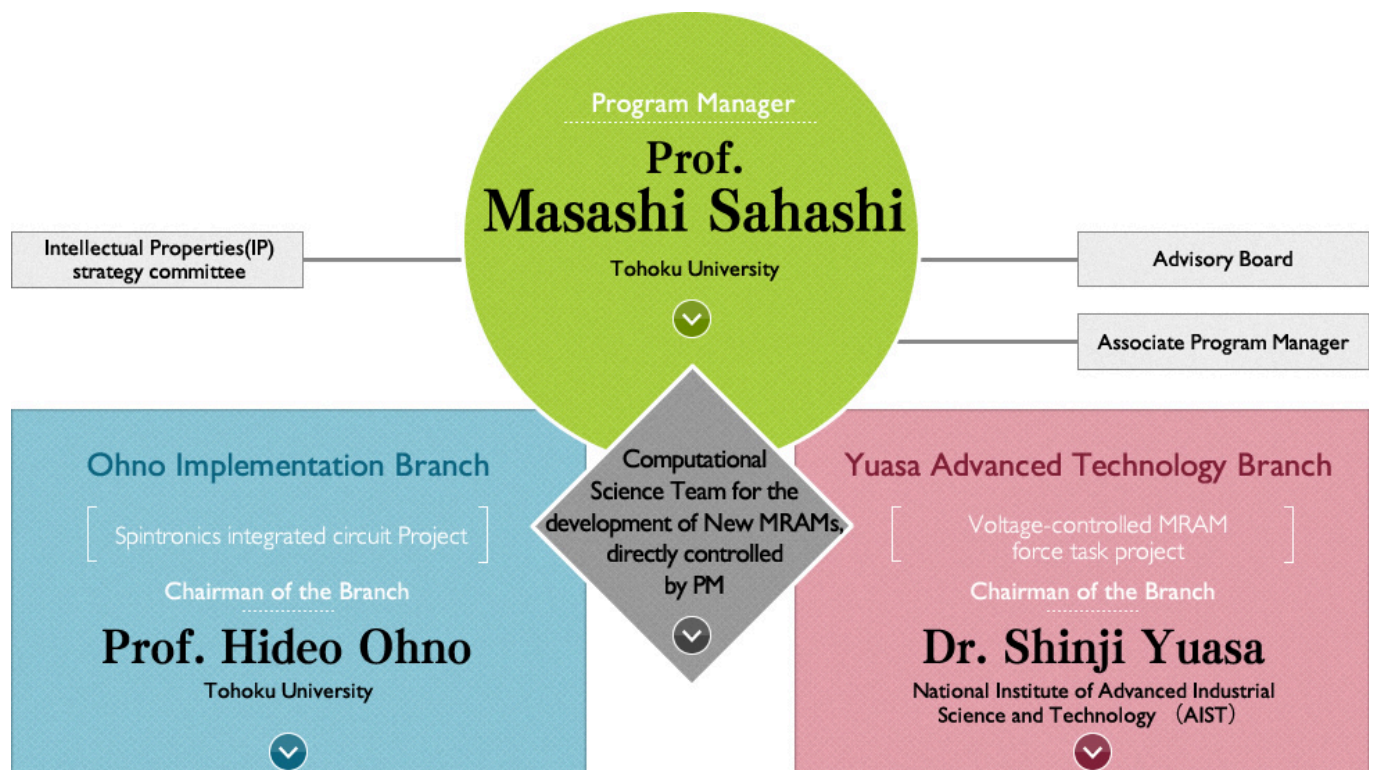
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ORGANIZATION





Impulsing Paradigm Change through Disruptive Technologies Program (ImPACT) /
Cabinet Office, Government of Japan.
ImPACT Program Manager

Prof. Masashi Sahashi

Tohoku University

1974 Graduate, Nagoya University Master's Course
Researcher, Toshiba Research& Development Center

1999 Senior Fellow, Toshiba Research& Development Center

2002 Doctorate, Engineering (Nagoya University Graduate School)

2003 Professor, Tohoku University Graduate School of Engineering

2014 ImPACT Program Manager
(Joint appointment between Tohoku Univ. and JST)

Awards and Recognition the Science and Technology Director Award, the Nikkei BP
Technology, Grand Awards, the Onshi Invention Award, the
Shijuhosho (Medal of Honor with Purple Ribbon)

Ohno Implementation Branch (Spintronics integrated circuit Project)



Chairman of the Branch

Prof. Hideo Ohno

Tohoku University

Affiliation: Professor and Director

Research Institute of Electrical Communication, Tohoku University,
Director

Center for Spintronics Integrated Systems, Tohoku University,
Professor

Center for Innovative Integrated Electronic Systems, Tohoku University,
Principal Investigator

WPI-Advanced Institute for Materials Research, Tohoku University,
Director

Center for Spintronics Research Network, Tohoku University

Academic Background: Ph. D, Electronic Engineering, University of Tokyo

Research field: Spintronics, Applied Physics, Electronic Engineering

Awards and Recognition: IBM Japan Science Award,
IUPAP Magnetism Prize,

Japan Academy Prize,

Presidential Prize for Research Excellence of Tohoku University,

The 2005 Agilent Technologies Europhysics Prize,

IEEE Magnetics Society

Distinguished Lecturer 2009,

Thomson Reuters Citation Laureate,

JSAP Outstanding Achievement Award,

IEEE David Sarnoff Award,



JSAP Compound Semiconductor Electronics Achievement Award,
Leo Esaki Prize,
C&C Prize

- Ohno Laboratory, Tohoku University
- Center for Spintronics Integrated Systems, Tohoku University



Prof. Tetsuo Endoh

Tohoku University

Affiliation:

Professor: TOHOKU University Graduate School
of Engineering Department of Electrical
Engineering

Director: TOHOKU University Center for
Innovative Integrated Electronic Systems

Research field:

Integrated Circuit, Non-volatile memory, Non-
volatile logic, Power management, Power
devices, Power electronics

- TOHOKU University Endoh Muraguchi Lab.
- TOHOKU University Center for Innovative
Integrated Electronic Systems



Prof. Takahiro Hanyu

Tohoku University

Affiliation:

Professor, Research Institute of Electrical
Communication, Tohoku University

Research field:

High-performance, ultra-low-power and highly
reliable VLSI processor and its application to
IoT systems, Circuit and architecture design
methodology for nonvolatile logic-in-memory
LSI, Brain-inspired LSI and its system
applications

- Hanyu/Natsui Laboratory, Tohoku University

Yuasa Advanced Technology Branch (Voltage-controlled MRAM task force project)



Chairman of the Branch

Dr. Shinji Yuasa

National Institute of
Advanced Industrial Science
and Technology (AIST)

Affiliation: National Institute of Advanced Industrial Science and Technology (AIST)

Academic Background: Dr. Shinji Yuasa received a PhD in Physics from Keio University in 1996. After receiving his doctorate, he served as a staff scientist at the Electrotechnical Laboratory (Tsukuba, Japan), where he worked on spin-dependent transport in metallic magnetic multilayers. Since 2001, he has been a staff scientist at the National Institute of Advanced Industrial Science and Technology (AIST), working on the physics and device applications of magnetic tunnel junctions (MTJs). Since 2010, he has been a Director of the Spintronics Research Center at AIST. He has given more than 100 invited talks at international conferences. For his achievement of the giant tunnel magnetoresistance (TMR) effect in MgO-based MTJs, he has been awarded or co-awarded more than 20 prizes, including the Asahi Award in 2007 and Distinguished Lecturer of IEEE Magnetic Society in 2012.

Research field: materials Science, magnetism, spintronics

Awards and Recognition: The Science and Technology Prize (2016), the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology on "Studies on giant tunnel magnetoresistance effect". JSPS Prize (2010) on "Development of High Performance Magnetic Tunnel Junction Devices".

Tsukuba Prize (2009) on "Discovery of giant tunnel magnetoresistance in MgO-based magnetic tunnel junctions and its industrial applications". A prize of 5 million yen was awarded for S. Yuasa and Y. Suzuki.

Inoue Harushige Prize (2009) on "Magnesium oxide tunnel magnetoresistive element and its mass production technology".

Prime Minister Prize (2008) on "Development of high-performance magnetic tunnel junctions for ultra-high-density hard disk drives".

Asahi Award (2008) on "Studies on development and application of tunnel magnetoresistive effect (TMR)".

IBM Japan Science Prize (2007) on "Studies on tunnel magnetoresistive effects and their application".

Tokyo Techno Forum 21 Gold Medal Prize (2006) on "Study on spintronics technology for MRAM".

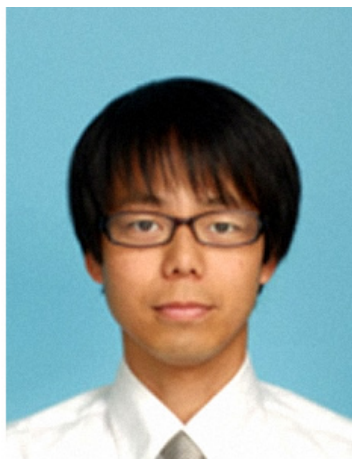
Marubun Science Prize (2006) on "Study on tunnel magnetoresistance effect".

Ichimura Science Prize (2005). A prize of 1 million yen was awarded for S. Yuasa.

The Young Scientists' Prize (2005), the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology on "Development of MgO-based magnetic tunnel junctions".

➤ AIST, Department of Electronics and Manufacturing





Dr. Takayuki Nozaki

National Institute of Advanced Industrial Science and Technology (AIST)

Affiliation:

National Institute of Advanced Industrial Science and Technology (AIST), Spintronics Research Center,

Research field:

Magnetic multilayers, Magnetoresistance, Voltage control of magnetic properties

➤ AIST, Department of Electronics and Manufacturing



Dr. Kazuhiro Hono

National Institute for Materials Science

Affiliation:

Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science

Research field:

Magnetic Materials, Magnetic Recording Media, Spintronic Materials, Magnetoresistive Devices, Strucgure analysis by 3DAP and TEM

➤ Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science



Prof. Shigemi Mizukami

Tohoku University

Affiliation:

Professor, Dr. of Eng. WPI - Advanced Insitute for Materials Research, Tohoku University

Research field:

Spintronics devices, Mgnetic material films, device characterization with ultrafast light pule

➤ AIMR: Researchers List Laboratories & Researchers



Prof. Yoshishige Suzuki

Osaka University

Affiliation:

Osaka University, Graduate School of Engineering Science National Institute of Advanced Industrial Science and Technology(AIST) National Institute for Materials Science(NIMS)



Dr. Hiroaki Yoda

Toshiba Corporation

Affiliation:

Corporate Research & Development Center

Research field:

MRAM, Spin Transfer Torque writing, Voltage Control Magnetic Anisotropy, Spin Orbit Torque writing, Switching mechanism of nano-magnet,



Dr. Shinobu Fujita

Toshiba Corporation

Affiliation:

Corporate Research & Development Center

Research field:

Nonvolatile Memory Systems and Applications, Semiconductor Memory Architect



Research field:

Spintronics

MTJ material, deposition, &etching, MRAM
Integration.

➤ [Y. Suzuki & S. Miwa Lab., Osaka University](#)



Dr. Motohiro Suzuki

Japan Synchrotron Radiation
Research Institute (JASRI)

Affiliation:

Japan Synchrotron Radiation Research Institute
(JASRI), Research & Utilization Division, Senior
Scientist, MCD Team Leader, D. Sc.

Research field:

Synchrotron X-ray absorption spectroscopy in
magnetic materials and development of related
techniques, earned the Award for Young
Scientist of the Physical Society of Japan

➤ [SPRING-8 Staff Profile](#)

Computational Science Team for the development of New MRAMs, directly controlled by PM





Dr. Hiroshi Imamura

National Institute of Advanced Industrial Science and Technology (AIST)

Affiliation:

National Institute of Advanced Industrial Science and Technology (AIST)
Spintronics Research Center
Theory Team, Team Leader

Research field:

Theoretical research for development of spintronics devices

› National Institute of Advanced Industrial Science and Technology (AIST)



Prof. Masafumi Shirai

Tohoku University

Affiliation:

Research Institute of Electrical Communication, Tohoku University, Professor; Center for Spintronics Research Network, Tohoku University, Deputy Director; Doctor of Engineering (Osaka University).

Research field:

Materials design, Condensed Matter Theory, Spintronics.

› Materials Functionality Design (Shirai Group), Research Institute of Electrical Communication, Tohoku University



Prof. Tatsuki Oda

Kanazawa University

Affiliation:

Professor, Faculty of Mathematics and Physics, Institute of Science and Engineering, Kanazawa University

Research field:

Theoretical material physics and computational material science. In particular, intersecting field among the three key words of Nanoscience, Magnetism, and First-Principles Molecular Dynamics, are mainly studied. The interface of perpendicular magnetization is one of interesting fields. A large scale computer is used to clarify a tiny scale of energy.

› Theoretical and Computational Nanoscience



Prof. Kohji Nakamura

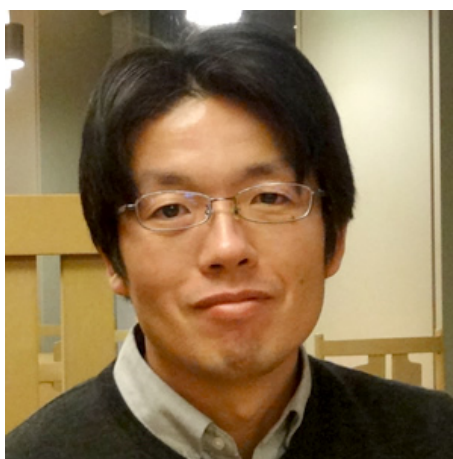
Mie University

Affiliation:

Mie University

Research field:

development of first-principles calculation



Prof. Yoshio Miura

Kyoto Institute of Technology

Affiliation:

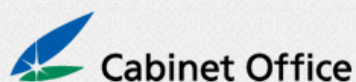
Kyoto Institute of Technology, Associate Professor (NIMS, CMSM&MI2I, Special Researcher)



methods and their use for investigations on noncollinear magnetism, magnetocrystalline anisotropy, and external electric field-induced magnetic phenomena at surfaces and interfaces

Research field:

Theoretical study on spin related physics such as magnetoresistance, magneto-crystalline anisotropy and magnetic damping



ImPACT PROGRAM

Achieving Ultimate Green IT Devices with Long Usage Time without Charging

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