

## Nanoelectronics

### ★ VICTORIES Open Innovation Hub

Silicon Photonics Consortium

AIST

#### Member

ETSC Micro Devices Co.  
NTT Advanced Technology Corporation  
Oki Electric Industry Co., Ltd.  
Sumitomo Electric Industries, Ltd.  
Tokyo Electron Ltd.  
FUJITSU OPTICAL COMPONENTS LIMITED

Sumitomo Corporation  
Kyushu Co.,Ltd.  
Advantest Laboratories Ltd.  
NIPPON TELEGRAPH AND TELEPHONE CORPORATION  
HAMAMATSU PHOTONICS K.K.  
Furukawa Electric Co., Ltd.  
Samsung R&D Institute Japan Co.Ltd.

### ● Strategic Program for Accelerating Research, Development and Utilization of Space Technology (STARDUST) Research and development of innovative FPGA for satellite digitalization

#### Participating Organization

NanoBridge  
Semiconductor, Inc.

JAXA

## Power electronics

### ★ Tsukuba power electronics constellations (TPEC)

AIST  
FUJI ELECTRIC CO., LTD.  
Sumitomo Electric Industries, Ltd.  
MIRISE Technologies  
TOSHIBA CORPORATION  
Showa Denko Materials Co., Ltd.  
Rigaku Corporation  
Komatsu Ltd.  
Oita Device Technology Co.,Ltd  
CATS Inc.  
TESEC Corporation  
TOKYO SEIMITSU CO., LTD  
Pulsed Power Japan laboratory ltd.  
Nissin Electric Co.,Ltd.  
NICHICON CORPORATION  
Central Research Institute of Electric Power Industry  
NOISE LABORATORY CO., LTD.  
PHENITEC SEMICONDUCTOR Corp.  
ROHM SEMICONDUCTOR Lasertec Corporation  
Hitachi High-Technologies Corporation  
TOYODA VAN MOPPES LTD.  
Takeuchi Electric Co., Ltd.  
SICOXS CORPORATION

SHOWA DENKO K.K.  
Fujimi Incorporated  
MIZUHO Co.,Ltd.  
TAIHEIYO CEMENT CORPORATION  
KOYO MACHINE INDUSTRIES CO.,LTD.  
IBIDEN  
Mipox Corporation  
Fujikoshi Machinery Corp.  
YASUNAGA CORPORATION  
Toyo Tanso Co.,Ltd.  
MITSUI MINING & SMELTING CO.,LTD.  
Fudow Co., Ltd.  
TANAKA Kikinzoku Kogyo K.K.  
KYOCERA Corporation  
Hitachi, Ltd.  
OGURA JEWEL INDUSTRY CO., LTD.  
PALACE CHEMICAL CO.,LTD.  
Makino Inc.  
University of Tsukuba  
Kyoto University  
Osaka University  
Tokyo Institute of Technology  
KEK  
NIMS  
Iwate University

### ★ Minimal Fab

Minimal Fab Promoting Organization

Member

Litho Tech Japan Corporation  
PMT CORPORATION  
Fujikoshi Machinery Corp.  
Seinan Industries Co., Ltd  
SAKAGUCHI E.H VOC CORP.  
Design Network  
Fuji Imvac Inc,  
KATAGIRI ENGINEERING CO.,LTD.  
SPP Technologies Co., Ltd.  
SANMEI CO., LTD.  
Yokogawa Solution Service Corporation  
HORIBA, Ltd.

Logic Research  
SANYO CO.,LTD.  
TOOL Corporation  
YONEKURA MFG. Co., LTD.  
Fujikin Incorporated  
JTEKT Thermo Systems Corporation  
WIDE TECHNO CO.,LTD

**Consortium member**  
123 companies including the members, 15 universities, 4 patent offices, 9 public organizations

### ● Development of Integration Technologies for Superconducting Quantum Circuits / Research and development of cryogenic LSI for control and readout qubits (\*2)

#### Participating Organization

NanoBridge  
Semiconductor, Inc.

Keio University  
The University of Tokyo

### ★ Applied superconductivity constellations of tsukuba (ASCOT)

AIST  
Suzuki Shokan Co.,Ltd.  
Sumitomo Heavy Industries, Ltd.  
Sumitomo Electric Industries, Ltd.  
Hitachi, Ltd.  
Fujikura Ltd.  
Furukawa Electric Co., Ltd.  
TAIYO NIPPON SANSO CORPORATION  
The Chugoku Electric Power Co.,Inc.

IMRA JAPAN Co., Ltd.  
Toshiba Energy Systems & Solutions Corporation  
University of Tsukuba  
The University of Tokyo  
Kyushu University  
Kyoto University  
Okayama University  
Tohoku University  
Sophia University  
NIMS  
KEK

### ★ SCR power electronics line (SPEL)

AIST  
Sumitomo Electric Industries, Ltd.

NISSIN  
ION EQUIPMENT CO. LTD.

### ● R&D for quantum and Ising computation systems (\*3)

AIST, 5 Companies, 2 Institutes, and 6 Universities

### ★ Non-Volatile Field-Programmable Gate-Array Initiative (NV-FPGA Initiative)

#### Corporate member

ad-dice Co., Ltd.  
CDC Inc.  
JANA Solutions, Inc.  
Meico Electronic Co.,Ltd.

NanoBridge Semiconductor, Inc.  
NSW Inc.  
Vectology, Inc.  
4 other companies

## MEMS

### ● Development of Sensing Technology for Detecting Extremely Weak Signals to Realize an IoT Society (\*3)

Non-invasive Blood analytic Monitor for Behavior Improvement System

TANITA corporation  
TOYAMA Prefectural University

The University of Electro-Communications  
Micromachine Center (MMC)

Skin volatile biosensor based on Nano-Integrated Fluorometry

TOKYO MEDICAL AND DENTAL UNIVERSITY

NMEMS technology research organization

### ● National Security Technology Research Promotion Fund (\*4)

Fundamental study on high stabilization of small clock oscillators based on quantum interference effect

Micromachine Center (MMC)  
AIST

NEC Corporation  
DAISHINKU CORP.

## Open research facilities

#### ● AIST

AIST Nanocharacterization Facility (ANCF)\*1  
Superconducting Quantum Circuit Fabrication Facility (Qufab)  
Battery Research Platform (BRP)\*2  
Nano-Processing Facility (NPF)\*1  
Advanced Bio-measurement Facility (BIO)  
Super cleanroom (SCR)  
MEMS Foundry (MEMS)  
Motion analysis Application Platform (MAP)

#### ● NIMS

Advanced Research Infrastructure for Materials and Nanotechnology\*1  
Battery Research Platform  
Material manufacturing and engineering station  
Material analysis station  
Transmission Electron Microscopy Station  
NMR Station  
Cryogenic Station  
Nanotechnology Innovation Station

## Human resource development

#### ● TIA graduate school

University of Tsukuba  
AIST  
NIMS  
KEK  
The University of Tokyo  
Ochanomizu University

Endowed laboratories  
TOYOTA MOTOR CORPORATION  
DENSO CORPORATION  
FUJI ELECTRIC CO., LTD.

## Carbon nanotubes

Activities at TIA ended in March 2022

Team of application for carbon nanotubes composites (TACC)

### ★ CNT alliance consortium

Consortium leader; AIST

#### ● University of Tsukuba

Nanoscience project facilities  
Advanced Research Infrastructure for Materials and Nanotechnology\*1  
Multi-tandem accelerator facilities

#### ● KEK

Photon Factory (PF)\*1  
Slow Positron Facility (SPF)  
Cryo-electron microscopy (CryoEM)  
Japan Proton Accelerator Research Complex, J-PARC\*1

#### ● The University of Tokyo

Takeda Sentanchi Building Supercleanroom\*1

#### ● Tohoku University

Hands-on-access fab.\*1

# Diverse linkage in TIA



### ★ Nanotech career-up alliance (Nanotech CUPAL) (\*2)

FY2014-FY2018; JST project  
FY2019-FY2021; Self-funded research

Project leader; AIST

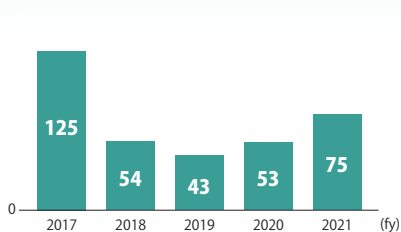
Number of collaborating institutions; 14

(\* 1) Ministry of Education, Culture, Sports, Science and Technology project  
(\* 2) Japan Science and Technology Agency project  
(\* 3) New Energy and Industrial Technology Development Organization project  
(\* 4) Acquisition, Technology & Logistics Agency project

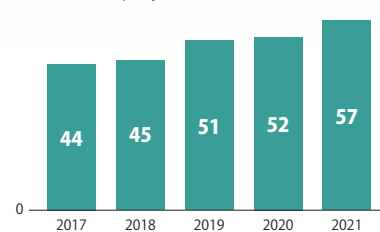
★ TIA project

As of 2022/11/1

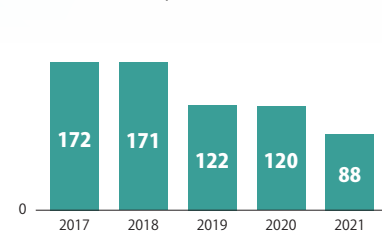
Total operation scale (100 million JPY)



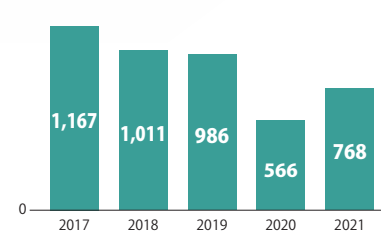
Project (number of projects; cumulative total)



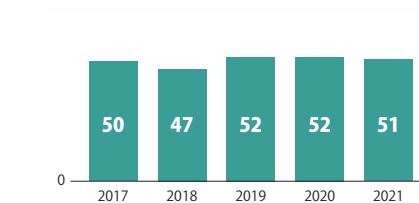
Cooperating companies (number of companies)



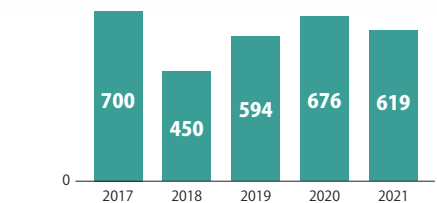
Students in TIA graduate school (number of students)



★ TIA Collaborative Research Program "Kakehashi" projects (total)



★ TIA Collaborative Research Program "Kakehashi" external research funds (million JPY in total)



Number of Open Research Facilities uses (total)

