Instrument Center

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NAKAMURA, Toshikazu	Team Leader
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UEDA, Tadashi	Engineer
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ASADA, Mizue	Chief Technician
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URUICHI, Mikio	Technician
MIYAJIMA, Mizuki	Technician
NAGAO, Haruyo	Technician
HIRANO, Kaho	Technician
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MANDAI, Kyoko	Technician
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OTA, Yasuhito	Project Manager
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IKI, Shinako	Technical Associate
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KUBOTA, Akiko	Technical Support Staff
IMAI, Yumiko	Technical Support Staff
UCHIDA, Mariko	Technical Support Staff
IWASE, Mahiro	Technical Support Staff
FUNAKI, Yumiko	Secretary
HYODO, Yumiko	Secretary
KURITA, Yoshiko	Secretary
TOYAMA, Yu	Secretary

Instrument Center was organized in April of 2007 by integrating the general-purpose and state-of-the-art facilities of Research Center for Molecular Scale Nanoscience and Laser Research Center for Molecular Science. The mission of Instrument Center is to support in-house and external researchers in the field of molecular science, who intend to conduct their researches by utilizing general-purpose and state-of-the-art instruments. The staffs of Instrument Center maintain the best conditions of the measurement apparatuses, and provide consultation for how to use them.

The main instruments the Center now maintains in Yamate campus are: Nuclear magnetic resonance (NMR) spectrometers (JNM-ECA 600, JNM-ECZL 600, and JNM-ECS400 for solutions), matrix assisted laser desorption/ionization time-of-flight (MALDI TOF) mass spectrometer (microflex LRF, Bruker Daltonics), ESI-TOF mass spectrometer (Bruker Daltonics, maXis), double-focusing mass spectrometer (JEOL JMS-777V), powder X-ray diffractometer (Rigaku RINT-Ultima III), molecular structure analysis using crystalline sponge method (Rigaku SuperNova), circular dichroism (CD) spectrometer (JASCO J-1500), differential scanning calorimeter (MicroCal VP-DSC), isothermal titration calorimeter (MicroCal PEAQ-iTC & iTC200), field emission transmission electron microscope (JEOL JEM-2100F), elemental analyzer (J-Science Lab Micro Corder JM10), ICP atomic emission spectroscopy (Agilent 5110 ICP-OES), fluorescence spectrometer (JASCO FP-8650DS), fluorescence lifetime spectrometer (Quantaurus-Tau C16361-01), electron probe microanalyzer (EPMA, JEOL JXA-8230/SS-94000SXES), and automatic organic molecular synthesis (Cole-Parmer reaction station Integrity 10).

In the Myodaiji campus, the following instruments are installed: Electron spin resonance (ESR) spectrometers (Bruker E580, E680, E500, EMX Plus, nanosecond pulsed laser for time resolved experiments), NMR spectrometer (Bruker AVANCE600 for solids), superconducting quantum interference devices (SQUID; Quantum Design MPMS-7, MPMS-XL7, MPMS-3), solid-state calorimeter (Rigaku DSC8231/TG-DTA8122), solution X-ray diffractometer (Rigaku NANO-Viewer), single crystal X-ray diffractometers (Rigaku Mercury CCD-1, CCD2, RAXIS IV, Rigaku HyPix-AFC, and Rigaku XtaLAB Synergy-R/DW), operando multipurpose x-ray diffraction for powder and thin films (Panalytical Empyrean), thermal analysis instruments (Rigaku DSC8231/TG-DTA8122), fluorescence spectrometer (SPEX Fluorolog), UV-VIS-NIR spectrometer (Shimadzu UV-3600Plus), Absolute PL quantum yield measurement (Hamamatsu Photonics Quantaurus-QY C11347-01), Raman microscope (Renishaw INVIA REFLEX 532), picosecond tunable laser system (Spectra Physics Tsunami and Quantronix Titan/Light Conversion TOPAS), low vacuum analytical SEM (Hitachi SU6600), angle resolved ultraviolet photoelectron spectroscopy (ARUPS) for functional band structures (Scienta-Omicron DA30), FTIR spectrometer (Bruker IFS 66v/S), two sets of *operando* scanning probe microscopes

(Bruker Dimension XR Icon Nanoelectrical & Nanoelectrochemical), and electron spectrometers for chemical analysis (ESCA) equipment (Scienta-Omicron, R4000L1).

In the fiscal year of 2024, Instrument Center accepted 148 applications from outside and the total user time amounted 2,598 days for outside and 1,209 days for in-house. Instrument Center also maintains helium liquefiers in the both campus and provides liquid helium to users (52,220 L/year). Liquid nitrogen is also provided as general coolants used in many laboratories in the Institute (41,871 L/year).

Instrument Center also organizes the Inter-University Network for Common Utilization of Research Equipments and the ARIM (Advanced Research Infrastructure for Materials and Nanotechnology in Japan) Program (FY2021–2030) supported by Ministry of Education, Culture, Sports, Science and Technology. These special programs are described in the other chapter of the booklet.

Awards

NAKAMURA, Toshikazu; 2024 Society Award of the Society of Electron Spin Science and Technology (SEST) in Japan (2024).
NAKAMURA, Toshikazu; “Outstanding Achievements” of ARIM Japan, MEXT (2025).