

List of Analytical Equipment
Radiation Measurement Systems

Equipment	Manufacturer	Description
Standard electrode coaxial Ge detector (stand-alone)	C Canberra Japan K K	Identification and quantification of radionuclides in environmental samples.
Standard electrode coaxial Ge detector (with auto-sampler)		
Extended range coaxial Ge detector		
Ultra low background Ge detector (well type 150mL)		
Alpha-ray semiconductor detector (8 chaneles)	ORTEC	
Liquid scintillation counters (Quantulus GCT 6220)	PerkinElmer Japan Co., Ltd.	
Liquid Scintillator (LSC-LB7)	Hitachi aloka	
Portable Integrated HPGe spectrometer (Micro-trans-SPEC)	ORTEC	

Analytical Instruments (including microscopes)

Equipment	Manufacturer	Description
Upright metallurgical microscopes	Olympus Corporation	Observation of diatoms, plankton, sand ponds, bedrock, minerals, clay and ores.
Scanning transmission electron microscope (FE-STEM)	Hitachi High-Technologies Corporation	The electron beam is used to observe the microstructure of the sample and analyze its composition.
Ultra-high resolution scanning electron microscope (FE-SEM)		
Laser diffraction particle size analyzer	Malvern Panalytical	Particles distribution analysis of powder samples.
Particle characterization tool	Rigaku Corporation	X-ray is used to analyze the structure and composition of environmental samples.
X-ray diffraction analysis (powder)		
X-ray fluorescence spectrometer	JASCO Corporation	Perform spectroscopic measurements on environmental samples.
UV/VIS/NIR Spectrophotometer		
FT-IR spectrometer and FT-IR microscope		
Fluorescence spectrophotometer	Hitachi High-Technologies Corporation	Perform quantitative analysis of metal ions in environmental samples, as well as separation and mass spectrometry.
Microwave plasma-atomic emission spectrometer (MP-AES)	Agilent Technologies Japan, Ltd.	
Inductively coupled plasma mass spectrometer	PerkinElmer Japan Co., Ltd.	Isotope ratio measurement of elements in environmental samples.
Multicollector thermal ionization mass spectrometer (TIMS)	Thermo Fisher Scientific K.K.	
Isotope ratio mass spectrometry (IRMS)	Bruker Daltonics K.K.	Analysis of chemical structures in environmental samples.
Ion trap mass spectrometer		
Elemental Analyzer (CHNS)	Elementar Analysensysteme GmbH	Determination of C, H, N, S composition ratio and organic carbon content in environmental samples.
Total organic carbon analyzer	SHIMADZU CORPORATION	
Ionchromatograph (with auto-sampler, anion & cation)	Thermo Fisher Scientific K.K.	Separation, qualitative and quantitative analysis of cations and anions in environmental water.
High performance liquid chromatographer	Thermo Fisher Scientific K.K.	Separation, qualification, and quantification of various solute components in environmental samples.
The Ion PGM Sequencer	Agilent Technologies Japan, Ltd.	Molecular biological measurements, such as DNA sequencing.
Genetic analyzer	Applied Biosystems	
StepOnePlus real-time PCR system		
Spectral scanning multimode reader	Thermo Fisher Scientific K.K.	

Coordinate Measuring Machines

Equipment	Manufacturer	Description
Multi-sensor coordinate measuring machines with X-ray computed tomography	Werth Messtechnik	Processing machine for shape measurement and microfabrication of samples.
Wire electric discharge system	Mitsubishi Electric Corporation	
Small-hole electric discharge machine		
Direct metal laser sintering machine	Concept Laser GmbH	
High resolution 3D printer	KEYENCE CORPORATION	
Focused Ion beam system (FIB)	Hitachi High-Technologies Corporation	

Sample Preparation System

Equipment	Manufacturer	Type
Electrolytic enrichment of tritium system	PERMELEC ELECTRODE LTD.	Tripure XZ030
Wet digester (Pre-incineration unit for ash determination)	BÜCHI Labortechnik AG	B-440 K415
Microwave sample preparation system	PerkinElmer Japan Co., Ltd.	TitanMPS
Water evaporating system (Large system)		SW-15KS
Sample oxidizer		Model 307 Sample Oxidizer

General purpose

Equipment	Manufacturer	Type	
1. For Fields			
Pocket survey meter	Hitachi, Ltd	PDR111	
Scintillation survey meter		TCS-172B	
GM survey meter		TGS-146B	
Andersen non burble air sampler	TOKYO DYLEC CORP.	AN-200	
Andersen high-volume air sampler (Impactor type)		AH-600Z	
GPS-linked automatic air dose rate recording system	Pony Industry Co.,Ltd	Hot spot finder HSF-1	
Horizontal water sampler	RIGO,Ltd	No5042C	
Electrical generator	Honda Motor Co., Ltd	ET4500	
Boat	Yamaha Motor Co., Ltd	Fishing Boat	
2. Sample Preparation			
V type mixing machine	DALTON CORPORATION	VM-30	
Atomizer		AIW-5	
Bead crusher	Bio-Medical Science Co Ltd	BMS-M10N21	
Mortar grinder	Nitto Kagaku.Co.Ltd	ALM-200DX	
Ultrasonic vibration sieving machine	Tokyo Garasu Kikai Co., Ltd.	TSK-PNS	
Sieve Shaker, Ro-Tap	Cosmic Mechanical Technology. co.,Ltd.	Model DA	
Rotary evaporator	Yamato Scientific.Co.Ltd	RE301B-W	
Mechanical Convection Oven		DKM400	
Standard Electric Furnace		F0810	
Low temperature incubator		IL800	
Gravity Convection Oven		DS601	
Autoclave		ST500	
Vacuum freeze drying equipment		TOKYO RIKAKIKAI Co., Ltd	FDU-1200
Shaking constant temperature water tank		ADVANTEC TOYO KAISHA, Ltd	TBK-202HA

Benchtop centrifuge		himacCT6E
High speed refrigerated centrifuge	Eppendorf Himac Technologies Co.,Ltd	himacCR21N
Benchtop centrifuge	KUBOTA	Model 8420
Power cutting Mill		P-25
Variable speed rotor mill	Fritsch Japan Co.,Ltd	P-14
Mixer mill	Verder Scientific Co., Ltd.	MM200
Mixer	Nihon BUCHI K.K.	B-400
3. Analysis		
Liquid nitrogen generator	IWATANI INDUSTRIAL GASES CORPORATION	EMP-14A (Air cooling) · GN-10T
Pure water equipment	ORGANO CORPORATION	PRA-0015-001 , PRB-002A
Ultra pure water equipment	ORGANO CORPORATION	PURIC-Z II , PURELAB UltraAnalytic
Practum analytical balance		PRACTUM224-1S
Micro·ultra micro balances	Sartorius Japan K.K.	ME36S