

Analytical Instruments of NIEA (39 項 64 台, listed by Nov. 2012)

No.	Instruments	Functions
1	Proton Transfer Reaction Mass Spectrometry (PTR/MS) (2009) 質子轉移反應質譜儀	Real-time online detection of low concentration volatile or semi-volatile organic compounds in air. Detection limit : ppb level. 線上即時檢測空氣中低濃度揮發或半揮發性有機物
2	Handheld Spectrum analyzer 手持式雷達電磁波偵測器	For the test of non-ionizing radiation(100kHz~7GHz) in ambient 環境中雷達電磁波強度測定
3	PM _{2.5} Weighing Lab (2008) PM _{2.5} 微量天秤及濾紙調理室	Analysis of ambient PM _{2.5} samples ($\mu\text{g}/\text{m}^3$) 空氣中 PM _{2.5} 樣品分析
4	Dioxins Sampler for Duct(2008) 排放管道戴奧辛採樣器	Sampling Dioxin in stack. 排放管道戴奧辛採樣
5	PM _{2.5} Sampler . PM ₁₀ Sampler (2007) PM _{2.5} 、PM ₁₀ 採樣設備	Sampling fine particulate in ambient ($\mu\text{g}/\text{m}^3$) 空氣中微粒 (PM _{2.5} 、PM ₁₀) 採樣
6	Mobile Lab for Air Quality Monitors (2008) 空氣品質監測車 (含 NO _x 、SO ₂ 、CO、CO ₂ 、EC、OC、THC 之監測設備)	Air Quality Monitoring in ambient. 空氣品質監測
7	Continuous Emission Monitoring Device for Hg (2004) 空氣中氣態汞自動監測儀	For the monitoring of gaseous mercury in ambient. Detection limit : ppb level. 監測空氣中氣態汞
8-1	GC-MS with Pre-concentrator for VOCs (2001) 揮發性有機物濃縮進樣設備－氣相層析質譜儀	For the analysis of volatile organic compounds in air. Detection limit : ppb level. 空氣中揮發性有機物分析
8-2	Gas Chromatography/Mass Spectrometry (GC/MS) (2010) 氣相層析質譜儀	For the analysis of volatile organic compounds in air. Detection limit : ppb level. 空氣中揮發性有機物分析

8-3	Gas Chromatography/Mass Spectrometry (GC/MS) (2011) 氣相層析質譜儀	For the analysis of volatile organic compounds in air. Detection limit : ppb level. 空氣中揮發性有機物分析
9-1	Micro-Orifice Uniform Deposit Impactor (2005) MOUDI 採樣器	For the determination of the particulate size distribution in ambient. 空氣中微粒粒徑分布測定
9-2	Micro-Orifice Uniform Deposit Impactor (2010) MOUDI 採樣器	For the determination of the particulate size distribution in ambient. 空氣中微粒粒徑分布測定
9-3	Micro-Orifice Uniform Deposit Impactor (2010) MOUDI 採樣器	For the determination of the particulate size distribution in ambient. 空氣中微粒粒徑分布測定
10	Wavelength Dispersive X-ray Fluorescence (2006) 油中硫分析儀	For the analysis of sulfur content existed in petroleum and petroleum products. Detection limit : ppm level. 石油產品中硫含量分析
11	Elective Radiation Meter (2008) 非游離輻射高頻電磁波頻譜分析儀	For the test of non-ionizing radiation in ambient. 環境中電磁波檢測
12	Sound level meter (2005) 精密型噪音計	For the test of noise in ambient. 環境噪音檢測
13	Vibration level meter (2009) 精密型振動監測分析儀	For the test of vibration in ambient. 環境振動檢測
14-1	Ion Chromatography (2010) 離子層析儀	For the analysis of Cr ⁺⁶ in ambient 分析空氣中六價鉻
14-2	Ion chromatography (2002) 離子層析儀	For the analysis of inorganic anions in water . 水中無機陰離子分析
15	Total organic carbon analyzer (2005) 總有機碳分析儀	For the analysis of total organic carbon in environmental samples. Detection limit : ppb levels. 環境樣品中總有機碳分析
16-1	Atomic Absorption Spectrophotometer (AAS) (2011) 原子吸收光譜儀	For the analysis of As, Hg in ambient / duct 分析空氣中/排放管道中砷汞

16-2	Flame atomic absorption Spectrophotometer (FAAS) (1991) 火焰式原子吸收光譜儀	For the analysis of metals in environmental samples. Detection limit : ppm~sub ppm levels. 環境樣品中重金屬分析
16-3	Arsenic by hydride generation / atomic absorption spectrometry (2001) 原子吸收光譜-砷分析儀	For the analysis of arsenic in environmental samples. Detection limit : ppb levels. 環境樣品中總砷分析
16-4	Mercury by cold-vapor atomic absorption spectrometry (2000) 原子吸收光譜-汞分析儀	For the analysis of mercury in environmental samples. Detection limit : ppb levels. 環境樣品中總汞分析
17-1	Inductively coupled plasma mass spectrometry (ICP-MS) (2007) 感應耦合電漿質譜儀	For the analysis of trace metals on suspended particulate matter aerosol in ambient. Detection limit : ppb ~ ppt levels. 空氣中微量重金屬分析
17-2	Inductively coupled plasma mass spectrometry (ICP-MS) (2004) 感應耦合電漿質譜儀	For the analysis of trace elements in environmental samples. Detection limit : ppb ~ ppt levels. 環境背景微量金屬元素分析
17-3	Inductively coupled plasma mass spectrometry (ICP-MS) (2006) 感應耦合電漿質譜儀	Specifically for the analysis of compounds composition in environmental samples. Can be used for the analysis of Cr and As when conjugated with HPLC. Also, can be used for the analysis of Sn compounds when conjugated with GC. 環境樣品中物種分析，搭配 LC 介面，以分析砷及鉻物種；搭配 GC 介面，以分析錫物種
18	Cold Vapor Atomic Fluorescence Spectrometry (CVAFS) (2005) 冷蒸氣原子螢光光譜儀	For the analysis of trace mercury in water. Detection limit : ppt levels. 水中微量汞分析
19	Gas chromatograph - Cold Vapor Atomic Fluorescence Spectrometry (GC-CVAFS) (2008) 氣相層析-冷蒸氣原子螢光光譜儀	For the analysis of methylmercury in environmental samples. Detection limit : ppt levels. 環境樣品中有機汞分析
20	X-ray Fluorescence Spectrometer (XRF) (2008) X 射線螢光分析儀	For the qualitative and quantitative analysis of elements in soil, waste and toxic chemical substances. 土壤、廢棄物及毒性化學物質中金屬元素成分定性及定量

21	X- ray diffractometer (XRD) (2008) X 光繞射儀	For the environmental forensic analysis on waste and toxic chemical substances. Can be used in the qualitative analysis of metal elements in soil, waste and toxic chemical substances. 廢棄物及毒性化學物質鑑識 廢棄物及土壤中各類金屬元素定性
22	Inductively Coupled Plasma Atomic Emission Spectrometry(ICP–AES) (2009) 感應耦合電漿原子發射光譜儀	For the analysis of metals in environmental samples of various matrices. Detection limit : ppb levels. 各類基質中金屬元素分析
23-1	High Performance Liquid Chromatography(HPLC)(2008) 高效能液相層析儀	For the analysis of aldehydes (formaldehyde, acetaldehyde...etc.) in ambient. Equipped with UV Fluorescence detector. Detection limit : ppb level. 空氣中醛類等有機物分析
23-2	High Performance Liquid Chromatography(HPLC)(1995) 高效能液相層析儀	For the analysis of carbamates and environmental agents. Equipped with UV Fluorescence detector. Detection limit : ppb level. 用於胺基甲酸鹽類化合物及環境用藥檢測
23-3	High Performance Liquid Chromatography(HPLC)(1998) 高效能液相層析儀	For the analysis of carbamates and environmental agents. Equipped with UV Fluorescence detector. Detection limit : ppb level. 用於胺基甲酸鹽類化合物及環境用藥檢測
23-4	High Performance Liquid Chromatography(HPLC)(2011) 高效能液相層析儀	For the analysis of explosive materials and environmental agents. Equipped with UV/ Fluorescence detector. Detection limit : ppb level 用於火炸藥物質及環境用藥檢測
24-1	High-performance liquid chromatography. Tandem mass spectrometer (LC/MS-MS) API2000 (2005) 高效液相層析串聯式質譜儀	For the analysis of algae toxins, environmental hormones , PFOA and PFOS in drinking water and water resources samples. Detection limit : ppb ~ ppt levels. 主要用於飲用水及水源中微囊藻毒、PFOA、PFOS 及環境荷爾蒙檢測

24-2	High-performance liquid chromatography. Tandem mass spectrometer (LC/MS-MS) API3000 (2007) 高效液相層析串聯式質譜儀		For the analysis of Pharmaceuticals Personal Care Products, pesticides and environmental hormones. Detection limit : ppb ~ ppt levels. 主要用於飲用水及水源中個人保健用藥、殘留農藥及環境荷爾蒙檢測
25	Gas Chromatography-Isotope Ratio Mass Spectrometry (GC/IRMS) (2005) 氣相層析儀/同位素比值質譜儀		For the analysis of stable isotope ratio of elements C, H and N existed in samples. In the compound specific IRMS analysis, organic compounds mixture samples can be introduced into the IRMS after GC separation and the following oxidization that convert these compounds into carbon dioxides with CuO combustor. C isotope ratio of individual organic compounds can be measured with high precision with Faradi Cup detectors. Powder samples can be introduced into the analyzer through the EA autosampler without the use of GC. Detection limit : ppm level. GC 先將樣品所含之成分分離，經燃燒轉換成氣體後，再依序進入同位素比質譜儀作偵測，適用於有機物中「碳、氫、氮」穩定性同位素之測定
26-1	High-Resolution Gas Chromatography /High-Resolution Mass Spectrometry(HRGC/HRMS) (1999) 氣相層析儀/高解析質譜儀		For the analysis of Dioxin, Dioxin-like PCBs, Polybrominated diphenyl ethers and Persistent organic pollutants. Detection limit : ppt level. 各類環境基質中戴奧辛、戴奧辛類多氯聯苯、多溴二苯醚及持久性有機污染物分析,偵測極限 ppt level
26-2	High-Resolution Gas Chromatography /High-Resolution Mass Spectrometry(HRGC/HRMS) (2001) 氣相層析儀/高解析質譜儀		For the analysis of Dioxin, Dioxin-like PCBs, Polybrominated diphenyl ethers and Persistent organic pollutants. Detection limit : ppt level. 各類環境基質中戴奧辛、戴奧辛類多氯聯苯、多溴二苯醚及持久性有機污染物分析,偵測極限可達 ppt level
26-3	High-Resolution Gas Chromatography /High-Resolution Mass Spectrometry(HRGC/HRMS) (2002) 氣相層析儀/高解析質譜儀		For the analysis of Dioxin, Dioxin-like PCBs, Polybrominated diphenyl ethers and Persistent organic pollutants. Detection limit : ppt level. 各類環境基質中戴奧辛、戴奧辛類多氯聯苯、多溴二苯醚及持久性有機污染物分析,偵測極限可達 ppt level

26-4	High-Resolution Chromatography /High-Resolution Spectrometry(HRGC/HRMS) (2010) 氣相層析儀/高解析質譜儀	Gas Mass	For the analysis of Dioxin, Dioxin-like PCBs, Polybrominated diphenyl ethers and Persistent organic pollutants. Detection limit : ppt level. 各類環境基質中戴奧辛、戴奧辛類多氯聯苯、多溴二苯醚及持久性有機污染物分析，偵測極限 ppt level
27-1	Purge and Trap Chromatography-Mass Spectrometry (Purge & Trap GC/MS) (2002) 吹氣捕捉/氣相層析質譜儀	Gas	Purge & Trap is a device use for the pretreatment of water samples containing VOCs. Analytes in sample are purged, trapped, desorbed into GC column for separation, detected by MS, The instrument can be used to detect VOCs in water. Detection limit : ppb level. 樣品中待測物被吹氣、捕捉及熱脫附至 GC 管柱分離，以質譜儀偵測，適用於檢測水中揮發性有機物，樣品可檢測至 ppb 等級
27-2	Purge and Trap Chromatography-Mass Spectrometry (Purge & Trap GC/MS) (2008) 吹氣捕捉/氣相層析質譜儀	Gas	Purge & Trap is a device use for the pretreatment of water samples containing VOCs. Analytes in sample are purged, trapped, desorbed into GC column for separation, detected by MS, The instrument can be used to detect VOCs in soil and water. Detection limit : ppb level. 待測物被吹氣、捕捉及熱脫附至 GC 管柱分離，以質譜儀偵測，適用於檢測土壤及水中揮發性有機物，樣品可檢測至 ppb 等級
28	Pyrolyzer / Chromatography-Mass Spectrometry (Py/GCMS) (2006) 熱裂解/氣相層析質譜儀	Gas	Analytes in sample are pyrolyzed into Evolved Gas, detected by GCMS. The instrument can be used to detect polymers and organics. Detection limit : percentage(%) level. 待測物經熱裂解成為逸散性氣體，進入氣相層析質譜儀偵測，適用於高分子及有機物檢測分析，樣品可檢測至百分比等級
29	Headspace / Chromatography-Mass Spectrometry (Headspace/GCMS) (2001) 頂空進樣/氣相層析質譜儀	Gas	Headspace is a device use for the pretreatment of water samples containing VOCs. Analytes in sample are heated into head space in bottle, then pressured into GC column for separation, detected by MS, The instrument can be used to detect VOCs in soil and water. Detection limit : ppm level. 待測物經加熱至瓶中頂空，再加壓至 GC 管柱分離，以質譜儀偵測，適用於檢測土壤及水中揮發性有機物，樣品可檢測至 ppm 等級

- 30-1 Gas Chromatography/Mass Spectrometry (GC/MS) (2003)
氣相層析質譜儀
Analytes in sample are separated by GC column, detected by MS. The instrument can be used to detect and identify all kinds of organics.
Detection limit : ppm level.
待測物經 GC 管柱分離，以質譜儀偵測，應用於各類有機化合物檢測及鑑識，可檢測至 ppm 等級
- 30-2 Gas Chromatography/Mass Spectrometry (GC/MS) (2011)
氣相層析質譜儀
Analytes in sample are separated by GC column, detected by MS. The instrument can be used to detect and identify all kinds of organics.
Detection limit : ppb~ppm level.
待測物經 GC 管柱分離，以質譜儀偵測，應用於各類有機化合物檢測及鑑識，可檢測 ppb 至 ppm 等級
- 31-1 Gel - Permeation cleanup (GPC) (2003)
膠滲透層析系統
For environmental samples pretreatment.
執行各種基質樣品淨化用
- 31-2 Gel - Permeation cleanup (GPC) (2004)
膠滲透層析系統
For environmental samples pretreatment.
執行各種基質樣品淨化用
- 32 Two-dimensional gas chromatography, time-of-flight mass spectrometry (2007)
二維氣相層析飛行式時間質譜儀
Semi-volatile organic compounds analysis.
Detection limit : ppb level
有機污染物的分析
- 33 SuperCapella 96 Well Array Plate CCD (charge coupled device) imager (2009)
96孔微盤式生物晶片電荷耦合元件 CCD 影像分析系統
An imager built around a super-cooled CCD detection chip which provides the highest quality chemiluminescence data possible for the Array Plate Platform. Can measure single-copies of genes in as few as 1,000 cells per well.
生物晶片用
- 34 Tabletop Scanning Electron Microscope, SEM (2008)
桌上型類掃描電子顯微鏡
An imaging platform with higher resolution and deeper focus depth. It can show the sample surface morphology in contrast due to different average atomic number composition within the sample. Provides an alternative to optical microscopes, stereo microscopes and confocal laser scanning microscopes. Applicable in sectors such as environmental science, textiles, materials science, semiconductor and education.
污染物型態鑑定

- 35-1 Real-time Polymerase chain reaction, (Q-PCR) machine (2002)
即時定量聚合酵素鏈鎖反應儀
An instrument used to amplify and simultaneously quantify a targeted DNA molecule. It can identify target's specific gene sequence with TaqMan probe. Able to measure the quantity of PCR products using fluorescent in real-time without the need of post-PCR processing. Normally used in identification of pathogen in microbial organisms.
致病微生物檢測
- 35-2 Fast Real-time Polymerase chain reaction, (Q-PCR) machine (2008)
快速即時定量聚合酵素鏈鎖反應儀
An instrument used to amplify and simultaneously quantify a targeted DNA molecule. It can identify target's specific gene sequence with TaqMan probe. Able to measure the quantity of PCR products using fluorescent in real-time without the need of post-PCR processing. Normally used in identification of pathogen in microbial organisms.
致病微生物檢測
- 35-3 Fast Real-time Polymerase chain reaction, (Q-PCR) machine (2009)
攜帶式快速即時定量聚合酵素鏈鎖反應儀
An instrument used to amplify and simultaneously quantify a targeted DNA molecule. It can identify target's specific gene sequence with TaqMan probe. Able to measure the quantity of PCR products using fluorescent in real-time without the need of post-PCR processing. Normally used in identification of pathogen in microbial organisms.
致病微生物檢測
- 36-1 Handheld X-ray Fluorescent Analyzer (2008)
攜帶式 x 射線螢光光譜分析儀
A compact energy dispersive X-ray fluorescence spectrometer for the continuous, fatigue-free handheld analysis and sorting of metals. Can conduct laboratory-like analyses for up to 41 elements in a single measuring cycle that lasts only few seconds.
重金屬污染物現場篩檢用
- 36-2 Handheld X-ray Fluorescent Analyzer (2006)
攜帶式 x 射線螢光光譜分析儀
A compact energy dispersive X-ray fluorescence spectrometer for the continuous, fatigue-free handheld analysis and sorting of metals. Can conduct laboratory-like analyses for up to 41 elements in a single measuring cycle that lasts only few seconds.
重金屬污染物現場篩檢用
- 36-3 X-ray Fluorescence Spectrometer (XRF) (2012)
X 射線螢光分析儀
For the qualitative and quantitative analysis of elements in soil, waste and toxic chemical substances. 土壤、廢棄物及毒性化學物質中金屬元素成分定性及定量

- 37-1 Microplate Luminometer(2005)
分注式冷光分析儀
- A sensitive photometer used for measuring very low light levels as those produced in a luminescent process. Provides a range of dedicated microplate luminometers and a multimode reader for all common microplate formats, petri dishes and Teraski plates. Used specifically for dioxin screening purposes here. Detection limit can be as low as 0.16 pg TEQ/g.
類戴奧辛化合物快速篩檢用
- 37-2 Liquid Handling Workstation and Luminometer (2012)
自動化樣品處理及冷光分析系統
- Workstation for automated 96 well plate washing, reagent dispensing and luminescence detecting.
自動化進行 96 孔盤細胞清洗、試劑添加及冷光測試
- 38 High-throughput Robotic Liquid Handling System (2012)
高通量自動移液分注設備
- Automated reagent addition, sample mixing and dispensing for cell-based dioxin bioassay
自動化進行戴奧辛篩檢試驗之試劑添加、樣品混合及分注
- 39 Automatic Solvent Extractor With High Pressure for Dioxin Compound Analysis (2012)
戴奧辛全自動高壓溶劑萃取儀
- Elevated temperature and pressure to extract dioxin compounds from environmental samples with a minimum amount of solvent and high throughput.
提高溫度和壓力，用最小量的溶劑及高通量地從環境樣品中萃取戴奧辛化合物。
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