

Organic elemental analysis customer testimonials compendium

Your samples, our experience

Introduction

To understand the elemental composition of a sample and draw conclusion on product quality, Elemental Analysis (EA) utilizes carbon, hydrogen, nitrogen, sulfur and oxygen, which help determine the structure of an unknown compound, as well as to evaluate the structure and purity of a synthesized compound.

Being approved by official methods, ASTM among others, Elemental Analysis is the technique of choice for the quantitative determination, by oxidation and pyrolysis, of CHNS/O content in samples. When coupled to detectors (for example a Flame Photometric Detector (FPD) or to an Isotope Ratio Mass Spectrometry) Elemental Analysis enables to access a wealth of information from a sample.

The analytical technique provides reliable analysis of elemental content for a variety of application fields:

- **Organic chemistry:** for quality control analysis of fine chemicals, halogen-compounds etc.
- **Petrochemistry and energy:** for the characterization of refined fuels, biofuels, biomass fuel, gasoline, coal, pet-coke, and lubricants.
- **Environmental:** for the determination of elemental content of compost, water, particulate matter.
- **Agronomy and marine science:** for the characterization of soil, leaves, plants, fertilizers, marine science, sediments, algae, plankton etc.
- **Material characterization:** for quality assessment of rubbers, polymers, plastic, paper, metals etc.
- **Food and feed quality:** for the analysis of protein content for compliance with labeling and other food and feed manufacturers requirements.

With over 50 years of experience, Thermo Fisher Scientific is your reliable partner for organic elemental analysis (OEA). The Thermo Scientific™ FlashSmart™ Elemental Analyzer (EA) is a flexible solution that expands your CHNS/O analysis with over 20 configurations in one system.

This Elemental Analysis Compendium will guide you through a non-exhaustive list of OEA users running their applications on the Thermo Scientific™ Flash™ Series Elemental Analyzers.



Organic chemistry



INHA UNIVERSITY

INHA UNIVERSITY, 100 Inha-ro, Michuhol-gu, Incheon 22212, Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <INHA University> (Laboratory specailized), use the following equipment to perform (Material Characterization/Organic Chemistry) organic elemental analysis):

Thermo Scientific FlashSmart <CHNS/O> (MVC-MasPlus autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

<Signature Company Director/Lab management>

A handwritten signature in black ink, appearing to be a stylized name, possibly 'Jae-won'.



Shimo-Okubo 255, Sakura, Saitama, 338-8570 JAPAN

6th floor of Daido-Seimei Building, 1-23-1 Kishiki-cho, Omiya, Saitama, 330-0843 JAPAN

To whom it may concern,

we, Saitama University, use the following equipment to perform CHNS single channel analysis:

Thermo Scientific FlashSmart CHNS (*Single Channel*)

We confirm that the above product(s) and related services provided by Yamato-Scientific are suitable for performing daily routine analysis for this type of application for research.

Sincerely,

新美 智久

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Servei Central de Suport a la
Investigació Experimental [SCSIE]
UNIVERSITAT DE VALÈNCIA

scsieuv
Donant suport a la recerca

Juan José Borrás Almenar

Director del SCSIE-UV
Teléfono: 963 54 41 80
Movil: 620 16 35 11
extensión 93468
juan.j.borras@uv.es

Thermo Fisher Scientific
Avenida de la Vega, 1
Edificio 1 - 4ª Planta
28108 Alcobendas (Madrid)
Spain

To whom it may concern,

we, the SCSIE of Universitat de Valencia, laboratory specialized in analysis of all kind of products by atomic and molecular spectroscopy, use the following equipment to perform general organic elemental analysis:

Thermo Scientific™ FlashSmart with MultiValve Control (MVC) Module and AS 1310 liquid autosampler.

We confirm that the above product(s) and related services provided by Thermo Fisher Scientific are suitable for performing daily routine analysis for this type of application for research.

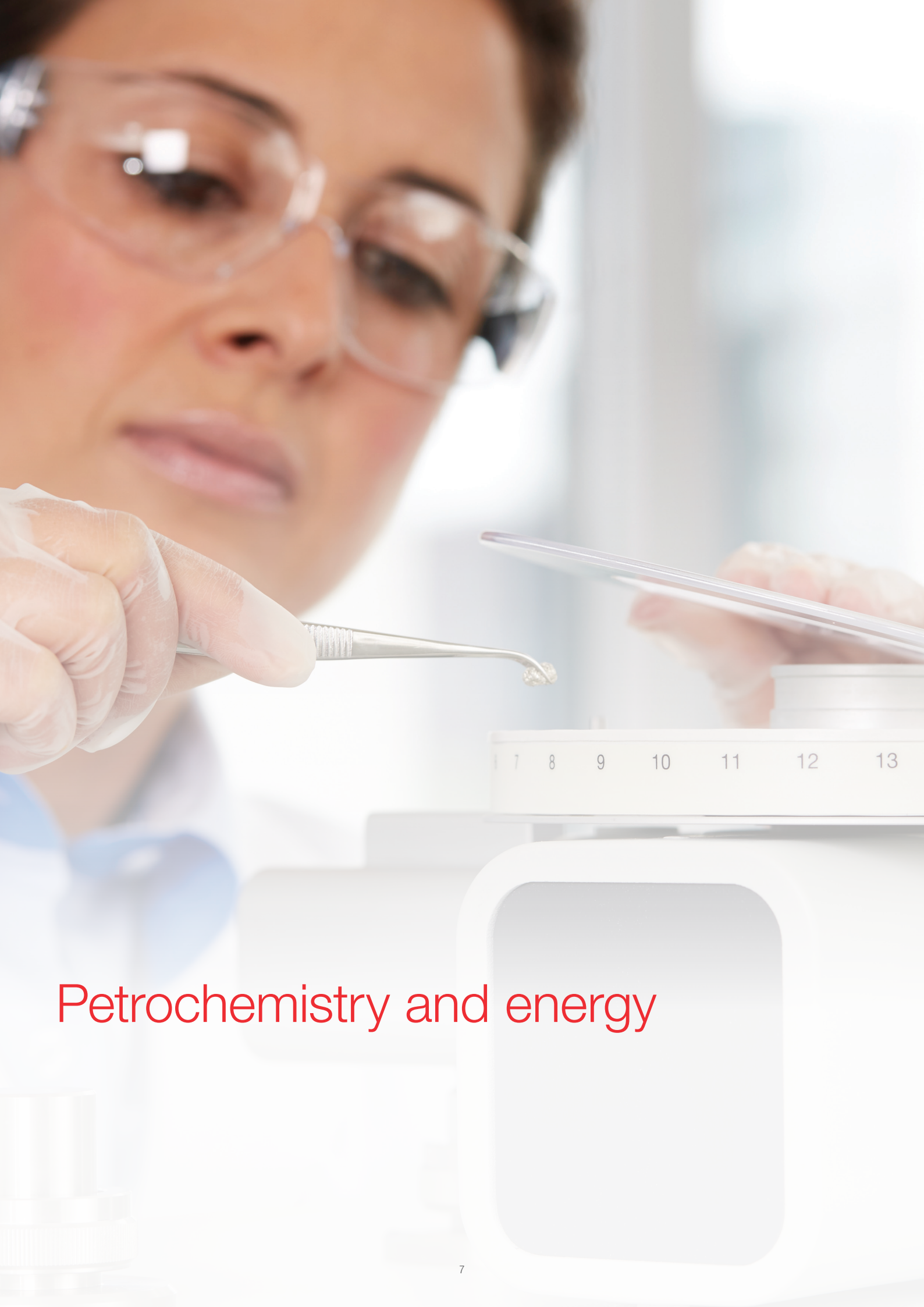
Sincerely,

DocuSigned by:
Salomé Laredo
C74CDBD3E374412...

Salomé Laredo Ortiz
Espectroscopía Atómica y Molecular.
Edificio de Investigación. SCSIE.
Universitat de Valencia.
Burjassot (Valencia)

JUAN JOSE BORRAS|
ALMENAR
Firmado digitalmente por
JUAN JOSE|
BORRAS|ALMENAR
Fecha: 2020.04.13
19:22:06 +02'00'

Juan José Borrás Almenar
Full profesor Inorganic Chemistry.
Director of the Service



Petrochemistry and energy



CIEMAT - CEDER
Autovia de Navarra A-15, Salida 56
42290 Lubia, Soria
Spain

Thermo Fisher Scientific
Avenida de la Vega, 1
Edificio 1 - 4ª Planta
28108 Alcobendas (Madrid)
Spain

Lubia, Soria 16th April, 2020

To whom it may concern,

we, at the Biomass Laboratory in CEDER CIEMAT, use the following equipment to perform CHNS organic elemental analysis:

Thermo Scientific FlashSmart with MultiValve Control Module (MVC)

We confirm that the above product and related services provided by Thermo Fisher Scientific S.L.U. are suitable for performing daily routine analysis for this type of application for research.

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. Fernandez Llorente', with a long horizontal stroke extending to the right.

Miguel Fernandez Llorente
Responsable del Laboratorio de Biomasa.
Centro de Desarrollo de Energías Renovables CEDER-CIEMAT.
Autovia de Navarra A-15, Salida 56 - 42290 Lubia, Soria
Tel: +34 975 281013 Ext:316
Fax: +34 975 281051



359, Expo-ro, Yusung-gu, Daejeon-city, Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <GS Caltex, Petroleum/Petrochemistry> (laboratory specialized/related products analysis), use the following equipment to perform (gasoline, Diesel (CHNS/O) organic elemental analysis):

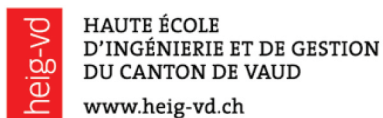
Thermo Scientific Flash2000 <CHNS> (MAS200R autosampler)

Thermo Scientific FlashSmart <O> (MVC/MAS200R autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

A handwritten signature in black ink, appearing to be 'J. H. Kim', written over a horizontal line.



Isabelle Monney
Haute École d'Ingénierie et de
Gestion du Canton de Vaud
Avenue des Sports 20
1401 Yverdon-les-Bains

Brechbühler AG
Steinwiesenstrasse 3
8952 Schlieren
Switzerland

To whom it may concern,

we, Haute École d'Ingénierie et de Gestion du Canton de Vaud, use the following equipment to perform CHNS/O organic elemental analysis:

Thermo Scientific Flash2000* and MAS solid autosampler.

We confirm that the above product(s) and related services provided by Brechbühler are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

Isabelle Monney

A handwritten signature in blue ink, appearing to read 'I. Monney'.

*new instrument version available - Thermo Scientific™ FlashSmart™ Elemental Analyzer



Thermo Fisher Scientific
16 avenue du Québec
Villebon sur Yvette
91941 Courtaboeuf cedex
France

IFPEN -Site de Lyon
Pole Analyse Elementaire
BP3 – 69360 Solaize
France

To whom it may concern,

we, IFPEN Lyon Pole 2, laboratory specialized in elementary analysis of petroleum product and materials (catalysts, rock, residues,...) use the following equipment to perform in N protein organic elemental analysis, CHONS analysis :

Thermo Scientific FlashSmart CHNS/O (with MultiValve Control (MVC) Module) and MAS autosampler for tin or silver basket . AS 1310 liquid autosampler is actually in test.

ThermoScientific FlashEA112 series CHNS and MAS autosampler for tin basket.

We confirm that the above products and related services provided by Thermo Fisher Scientific are suitable for performing weekly routine analysis for this type of application for quality control or research.

Sincerely,

Sylvain CARBONNEAUX
Analytical Activity Manager of the Elementary Analysis Laboratory



24-20, Noksansandan 335-ro, Gangseo-gu, Busan, Korea

(Busan Noksan Headquarters)

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <Korea Marine Equipment Research Institute> (Laboratory specialized), use the following equipment to perform (Petro-chemistry/oil etc) organic elemental analysis):

Thermo Scientific FlashSmart <CHNS/O> (with MultiValve Control(MVC) Module MAS Plus autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

A handwritten signature in black ink, appearing to be in Korean script, located below the word "Sincerely,".

<Signature Company Director/Lab management>



Environmental



Urbroj: 1811/20.

Zagreb, 16th, July, 2020.

KOBIS d.o.o.
E. Murtića 7
10 000 Zagreb

To whom it may concern,

we, Hrvatski geološki institut-Croatian Geological Survey, use the following equipment to soil and sediment analysis:

Thermo ScientificTM FLASH 2000* NC configuration.

We confirm that the above product(s) and related services provided by KOBIS d.o.o. are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

Director general

Dr.sc. Miko Slobodan, dipl.ing.geol.



UNIVERSIDAD DE
COSTA RICA

EIQ Escuela de
Ingeniería Química

17 de abril de 2020
EIQ-278-2020

A QUIEN CORRESPONDA

En la Escuela de Ingeniería Química de la Universidad de Costa Rica utilizamos el equipo Thermo ScientificTM FlashSmart CHONS (con MultiValve Control (MVC) Module) con autosampler para sólidos para análisis orgánico elemental de madera, residuos agrícolas orgánicos, pellets, productos del proceso de licuefacción hidrotermal, biochars y otros subproductos de proceso de gasificación de biomasa; así mismo, pronto esperamos analizar TOC en muestras de alúmina utilizada en catálisis.

Confirmamos que el equipo mencionado y los servicios relacionados provistos por ISASA LATAM S.A. son adecuados para realizar análisis elemental para este tipo de aplicación en investigación y desarrollo.

Atentamente,

Este documento está firmado digitalmente 

Ing. Esteban Duran Herrera, Ph.D.
Director

EDH/MSC

C. Archivo



La carrera de Licenciatura en Ingeniería Química es reconocida como sustancialmente equivalente por el Consejo Canadiense de Acreditación de Carreras en Ingeniería



-ANIVERSARIO-
UNIVERSIDAD DE
COSTA RICA

Nuestra
salud mental
importa



SVEUČILIŠTE U ZAGREBU - ŠUMARSKI FAKULTET
UNIVERSITY OF ZAGREB - FACULTY OF FORESTRY

Kobis d.o.o.
Ede Murtića 7
10 000 Zagreb

To whom it may concern,

We, **Faculty of Forestry, University of Zagreb (Laboratory of Ecology and Pedology)**, use the following equipment to perform Determination of OC (ISO 10694) and total N (ISO 13878) content in forest floor and mineral soil samples:

Thermo Scientific™ Flash 2000 NC-Soils configuration

We confirm that the above product(s) and related services provided by Kobis d.o.o. are suitable for performing daily routine analysis for this type of application for quality control or research. New instrument version available - Thermo Scientific™ FlashSmart™ Elemental Analyzer.

Sincerely,

Head of the Laboratory

prof. dr. sc. Darko Bakšić



Dean of the Faculty of Forestry

prof. dr. sc. Tibor Pentek





21 Yangcheong 3-gil, Ochang-eup, Cheongwon-gun, Cheongju-si, Chungcheongbuk-do, Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <FITI> (Laboratory specailized), use the following equipment to perform (Enviroment/waste material etc., (CHN) organic elemental analysis):

Thermo Scientific FlashSmart <CHN> (MVC-MAS200R autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

<Signature Company Director/Lab management>

Park Sang Eun. 박상은.



REPUBLIC OF SERBIA
INSTITUTE OF PUBLIC HEALTH OF BELGRADE

11000 BELGRADE, Bulevar despota Stefana 54-a

Telephone: 20 78 600 e-mail: info@zdravlje.org.rs www.zdravlje.org.rs

Director phone: +381 11 32 33 976, fax: +381 11 32 27 828 e-mail: direktor@zdravlje.org.rs

Center for Hygiene and Human Ecology

Phone/fax: +381 11 32 39 207; +381 32 35 080; +381 32 38 230 e-mail: slavisa.mladenovic@zdravlje.org.rs

Transfer account: 840 – 627667 – 91

PIB 100044907 ID number 07041152

Date: 30 APR 2020
ID: 118
Number: H37/1

For Dealer: "Analysis" D.O.O. Gandijeva 76A, 11070 Novi Beograd

To whom it may concern,

we, Institute of Public Health of Belgrade, Center for Hygiene and Human Ecology in field of expertise Environmental Monitoring, use the following equipment to perform Analysis of C,H,N,S,O and TOC in samples of waste, sludge, soil and sediment:

- Thermo Scientific FlashSmart 1206155 FlashSmart CHNS/O* with MultiValve Control with next items: 25117572 AS1310 Autosampler, 19004145 Kit for TOC, 19001202 Kit 1000 analyses CHNS/O, 19004285 CHNS Qualification Kit and 19004290 Oxygen Qualification kit

We confirm that the above product(s) and related services provided by ANALYSIS D.O.O. Gandijeva 76A, 11000 Belgrade are suitable for performing daily routine analysis for this type of application for quality control or research.

Assistant Director – Field of Hygiene and Ecotoxicology


Slaviša Mladenović, MD
Spec. in Hygiene

1

ISO 9001:2015

Reg.br. 12 104 41478 TMS
Važi do 14.09.2020.



ISO 14001:2015

Reg.br. 12 100 41478 TMS
Važi do 14.09.2020.



POB 86-3000 Heredia, Costa Rica

Plaza Diagonal, Alajuela, Costa Rica

To whom it may concern,

We, Atmospheric Chemistry Laboratory (Laboratorio de Química de la Atmósfera, LAQAT-UNA), are a specialized laboratory in air quality measurements, atmospheric emissions and fuel analysis. We use the following equipment to perform Carbon, Hydrogen, Nitrogen and Sulfur determination in lubricant oils, solid waste, bunker, etc: Thermo ScientificTM FLASH 2000*.

We confirm that the above product and related services provided by ISASA LATAM S.A. are suitable for performing daily routine analysis for this type of application for quality control and for the Chemistry School research projects.

Sincerely,

**JOSE PABLO
SIBAJA BRENES
(FIRMA)**

Firmado digitalmente
por JOSE PABLO SIBAJA
BRENES (FIRMA)
Fecha: 2020.04.15
11:37:50 -06'00'



M.Sc. José Pablo Sibaja Brenes

Atmospheric Chemistry Laboratory (LAQAT-UNA)

Chemistry School

*new instrument version available - Thermo ScientificTM FlashSmartTM Elemental Analyzer



UNIL | Université de Lausanne

Thierry Adate
Université de Lausanne
Institut de Géologie et de Paléontologie
Anthropôle
CH-1015 Lausanne

Brechbühler AG
Steinwiesenstrasse 3
8952 Schlieren
Switzerland

To whom it may concern,

we, Université de Lausanne, use the following equipment to perform CHNS/O organic elemental analysis:

Thermo Scientific Flash1112* and MAS solid autosampler.

We confirm that the above product(s) and related services provided by Brechbühler are suitable for performing daily routine analysis for this type of application for quality control or research.

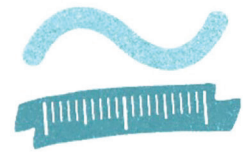
Sincerely,

Prof. Thierry Adate

*new instrument version available - Thermo Scientific™ FlashSmart™ Elemental Analyzer



Agronomy and marine science



BEUTH HOCHSCHULE
FÜR TECHNIK
BERLIN

University of Applied Sciences

Beuth Hochschule | Fachbereich V | Luxemburger Straße 10 | 13353 Berlin

Brechbühler AG

Steinwiesenstrasse 3

8952 Schlieren

Switzerland

Dipl.-Ing. (FH) Dirk Jäger

Fachbereich V

Gartenbauliche
Phytotechnologie

Luxemburger Straße 10
13353 Berlin

Tel. 030 4504-5088

dirk.jaeger@

beuth-hochschule.de

2. Juni 2020

To whom it may concern,

we, Beuth University of Applied Sciences, Phytotechnology in Horticulture, laboratory for Plant nutrition use the following equipment to perform N and C total analysis in plants and soils:

Thermo Scientific FlashSmart NC.

We confirm that the above product and related services provided by Brechbühler are suitable for performing daily routine analysis for this type of application education and research.

Sincerely,

Dirk Jäger
Research Engineer



Turrialba, Cartago, Costa Rica

Plaza Diagonal, Alajuela, Costa Rica

To whom it may concern,

We, Centro Agronómico de Investigación y Enseñanza, Laboratorio de Análisis de Suelos y Plantas, use the following equipment to perform organic Carbon, TOC, and Nitrogen determination in soil samples, vegetal material and organic fertilizers: Thermo Scientific™ FLASH EA 1112 Series*, NC Soil Analyzer, solid autosampler.

We confirm that the above product and related services provided by ISASA LATAM S.A. are suitable for performing research analysis and quality control analysis.

Sincerely,



www.catie.ac.cr



Patricia Leandro M.

Jefe Laboratorio de Suelos

Regente Químico

PRAGA, DIDVI.

☎(506) 25582132

✉pleandro@catie.ac.cr

CATIE combina ciencia, educación de posgrado e innovación para mejorar el bienestar humano mediante una gestión integrada de la agricultura y los recursos naturales en los territorios rurales de América Latina y el Caribe

*new instrument version available - Thermo Scientific™ FlashSmart™ Elemental Analyzer



216, Gijanghaean-ro, Gijang-eup, Busan, 46083, Republic of Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <National Institute of Fisheries Science> (Laboratory specailized), use the following equipment to perform (Agronomy & Marine Science/Soil, Filters etc) organic elemental analysis):

Thermo Scientific FlashSmart <NC> (MAS200R autosampler)

Thermo Scientific FlashSmart <NC> (MAS200R autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

<Signature Company Director/Lab management>



Material characterization



adolphe merkle institute
excellence in pure and applied nanoscience

Liliane Ackermann Hirschi
Bionanomaterials
Adolphe Merkle Institute
Ch. Des Verdiers 4
1700 Fribourg

Brechbühler AG
Steinwiesenstrasse 3
8952 Schlieren
Switzerland

To whom it may concern,

We, Adolphe Merkle Institute, use the following equipment to perform CHNS/O organic elemental analysis:

Thermo Scientific Flash2000* and MAS solid auto sampler.

We confirm that the above product(s) and related services provided by Brechbühler are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

Liliane Ackermann Hirschi

*new instrument version available - Thermo Scientific™ FlashSmart™ Elemental Analyzer



Infineum Italia s.r.l.
Strada di Scorrimento 2
Vado Ligure 17047 (SV)
Italy

To whom it may concern,

Infineum is a company specialized in the production and therefore testing of lube oil additives, and uses as a standard devices for all affiliates and I particular at the Infineum Italia srl site the following equipment to perform the nitrogen testing in our product using ASTM D 5291 (D) using the Thermo Scientific™ FLASH 2000, FLASH EA 112 (with MultiValve Control (MVC) Module) (FPD Detector, AS 1310 liquid autosampler.

We confirm that the above product(s) and related services provided by Thermo Fisher Scientific and its appointed dealers are suitable for performing daily routine analysis for this type of application for quality control and research.

Sincerely,

A handwritten signature in dark ink, appearing to read "Giuseppe Caini", written in a cursive style.

Manufacturing Technology Manager-
Analytical and Process Development

*new instrument version available - Thermo Scientific™ FlashSmart™ Elemental Analyzer



KAIST, 291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <KAIST> (laboratory specialized/related products analysis), use the following equipment to perform (Synthetic Materials/High-Tech materials/Various Material etc., (CHNS/O) organic elemental analysis):

Thermo Scientific Flash1112 <O> (MAS200R autosampler)

Thermo Scientific Flash1112 <CHN/F> (MAS200R autosampler)

Thermo Scientific Flash2000 <CHNS> (MAS200R autosampler)

Thermo Scientific FlashSmart <CHNS/O> (MVC-MAS200R autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

<Signature Company Director/Lab management>

Kim Sung Yeal 김성열
Park Sol 이 박솔이



KUNSAN NATIONAL UNIVERSITY

558, Daehak-ro, Gunsan-si, Jeollabuk-do, South Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <KUNSAN National University> (Laboratory specailized), use the following equipment to perform (Material Characterization/Organic Chemistry) organic elemental analysis):

Thermo Scientific FlashSmart <CHNS/O> (MVC-MAS200R autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing daily routine analysis for this type of application for quality control or research.

Sincerely,

A handwritten signature in black ink, consisting of stylized characters and numbers, likely representing the company director or lab management.

<Signature Company Director/Lab management>

SAMSUNG SDI



150-20, Gongse-ro, Giheung-gu, Younin-si, Gyeonggi-do, South Korea

McCoy E&C Corporation

28, Yeomgogan-gil, Seocho-gu, 137-170 SEOUL, KOREA

To whom it may concern,

we, <Samsung SDI> (laboratory specialized/related products analysis), use the following equipment to perform (Organic Chemistry/Polymers etc..(CHNS/O) organic elemental analysis):

Thermo Scientific FlashSmart <O> (MVC/MAS200R autosampler, AS 1310 Liquid autosampler)

We confirm that the above product(s) and related services provided by McCoy E&C are suitable for performing **daily routine analysis** for this type of application **for quality control or research**.

Sincerely,

<Signature Company Director/Lab management>

이 김재 



Food and feed quality

To whom it may concern,

至敬爱的用户

We, ATCC, laboratory specialized in N protein and related products analysis, use the following equipment to perform N protein organic elemental analysis:

Thermo Scientific FlashSmart N protein

我司，爱信（南通）汽车技术中心，是在汽车检测领域有着丰富的经验，我们配有 FlashSmart N Protein（杜马斯氮）分析仪。

We confirm that the above product(s) and related services provided by DKSH China are suitable for performing daily routine analysis for this type of application for quality control or research.

我方确认，DKSH 中国提供的上述产品和服务适用于此类质量控制或研究应用的日常例行分析。

Sincerely,

致礼

Signature

(Company Director/Lab management)

签名（盖章）：





Conclusions

Elemental Analysis is a very versatile technique, which is able to deal with different samples and applications. Whether you are focused on QA/QC of lubricants or petrochemical products or N/Protein analysis of food and feed samples or you need to determine the quality of a material, Elemental Analysis enables you to characterize your samples through the quantification of carbon, hydrogen, nitrogen, sulfur and oxygen. Being recognized by Official Methods, Elemental Analysis enables compliant analyses in a variety of applications. The FlashSmart EA enables your laboratory to meet existing regulations and have the flexibility of dealing with growing analytical demands. Utilizing the Dumas (combustion) method, it offers efficiency and features that a modern lab requires, meeting demand on usability and throughput.

Your sample, our experience.

Find out more at thermofisher.com/OEA

ThermoFisher
SCIENTIFIC

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