SHIMADZU
Excellence in Science

e-liquids, e-juices and nicotine liquids

Customized solutions for complete analysis

Analytical solutions meeting the latest regulations

e-liquids are a mixture of glycerin, propylene glycol, water and different flavors which are inhaled through an electronic vaporizer. Some of them also contain caffeine or nicotine in different concentrations.

In 2016, the FDA finalized a rule extending their regulatory authority to cover all tobacco products, including vaporizers and electronic cigarettes (e-cigarettes). This also means manufacture and labeling of e-liquids will be monitored more closely by the administration.

From 2017, a list of new regulations will become effective, forcing e-liquid manufacturers to submit ingredient (CAS# and IUPAC name) listings for their products as well as quantities of harmful and potentially harmful constituents.

Shimadzu offers a wide range of analytical equipment and provides appropriate configurations and application support for full e-liquid analysis. This brochure shows customized solutions and configurations. Please feel free to contact us for more information according to your needs.

GC-MS for identification and quantitation of nicotine and flavor compounds in e-liquids

The combination of the GCMS-QP2020 NX single quadrupole mass spectrometer with the FID-2010 Plus detector allows a very simple and robust determination of nicotine concentration (by flame ionization), identification of CAS# and IUPAC-name (by mass spectrometry), and quantitation of many flavor compounds in e-liquids.

Flavors used in e-liquid production often have very similar mass spectra, which makes it difficult to identify them with ordinary libraries. To ensure most accurate compound identification, Shimadzu offers the FFNSC 3.0 mass spectral library. It contains flavor dedicated mass spectral information as well as linear retention indices (LRIs) on various columns to improve identification quality.

www.ssi.shimadzu.com/products/gas-chromatography-mass-spectrometry/gcms-qp2020-nx.html

ICP-OES for determination of heavy metals

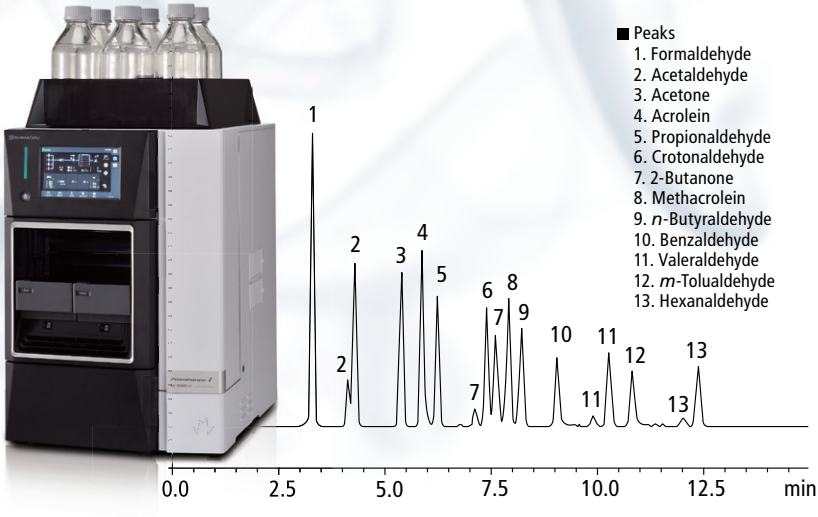
Inductively Coupled Plasma Optical Emission Spectrometry

The ICPE-9800 series consists of high-speed simultaneous systems with axial and/or radial view. The instruments feature large 1 inch² CCD for low noise, vertical mini-torch technology for low running costs and fully featured ICPE Solutions software for ease of use.

The proposed setup for the measurement of metals in e-liquids and e-liquid aerosols is an ICPE-9820 Dual View ICP-OES with optional peristaltic pump and internal standard kit. Typically, measured elements are tin (Sn), copper (Cu), aluminum (Al), iron (Fe), chromium (Cr), silver (Ag) with yttrium (Y) as internal standard.

www.ssi.shimadzu.com/products/elemental-analysis/icpe-9800.html

HPLC analysis of main components



The i-Series integrated LC system offers ultimate performance for routine QA/QC analysis in a very compact format. Reliable quantitative data is provided through high-speed analysis with minimized environmental impact, easy maintenance and ease of use through touch panel control, chromatogram monitor and easy-batch function. The i-Series is a powerful tool for the determination of nicotine, caffeine, aldehydes or nitrosamines in e-liquids, even for novices in instrumental analysis.

www.ssi.shimadzu.com/products/liquid-chromatography/i-series.html

For more information regarding e-cigarettes and application support for the analysis of e-liquids and vapors, please contact us:

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