SmartNotes

What do “Flash” and “Smart” mean in the Thermo Scientific FlashSmart Analyzer?

The Thermo Scientific™ FlashSmart™ Elemental Analyzer (Figure 1) operates with the dynamic flash combustion of the sample for CHNS determination, while for oxygen analysis it operates in pyrolysis mode. The resulted gases are carried by a helium (or argon) flow till a gas chromatographic column, which provides the separation of the gases, and finally, detected by a thermal conductivity detector (TCD). A complete report is automatically generated by the Thermo Scientific™ EagerSmart™ Data Handling Software and displayed at the end of the analysis.

Figure 1. Thermo Scientific FlashSmart Elemental Analyzer.

Thermo Scientific FlashSmart: The Elemental Analyzer

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The term "**Flash**" derives from the principle of the combustion method (modified Dumas Method). Samples are weighed in tin containers and introduced into the combustion reactor at high temperature via the Thermo Scientific™ MAS Plus Autosampler and alongside the proper amount of oxygen to support sample combustion. Thanks to the exothermic reaction, the temperature reaches about 1800°C in few seconds, generating a flash which is visible from the viewer of the autosampler (Figure 2).

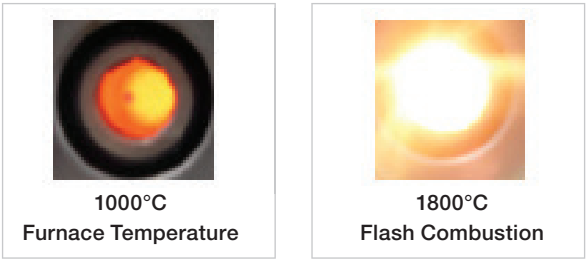

Figure 2. Sight from the reactor through the viewer of the MAS Plus Autosampler.

This means that the complete combustion of the sample has happened. The Thermo Scientific™ OxyTune™ Function, through the Eager*Smart* Data Handling Software, automatically evaluates the oxygen used for combustion, according to the weight and nature of the sample. This function assures the complete combustion of any matrix (solid, liquid, viscous, gas, organic and inorganic) and increase the lifetime of the catalysts reducing the maintenance of the Analyzer.

The term **"Smart"** relates to the automation and modularity of the Flash*Smart* Analyzer. The Flash*Smart* EA is an all-in-one hardware platform that is easily configured in over 20 configurations under the full control of the Eager*Smart* Data Handling Software.

The Analyzer is characterized by:

- Extensive modularity and integration capabilities. For example with the Thermo Scientific™ Isotope Ratio Mass Spectrometer or the Flame Photometric detector, allowing you to easily add extra configurations.
- Maximum productivity by the simultaneous determination of four elements (CHNS). The system allows you to detect oxygen and sulfur without the need for extended module and utilize single or double reactor options for higher throughput.
- Multiple autosampler options providing you with unattended operation. You can decide to have one or two Thermo Scientific MAS Plus Autosampler, Thermo Scientific™ AI/AS 1310 Liquid Autosamplers, or a combinations of these.
- The flexibility to choose between helium or argon as carrier gas.
- Ease of use and ease of maintenance.
- The flexibility to handle any sample type: solids, liquid, viscous, volatile and gas.
- Easy upgrade of configurations according to the application field.
- The Thermo Scientific MultiValve Control (MVC) Module enabling you to switch automatically between the left and right furnace. It provides multiple configurations, for example CHNS/O, CHN/O, CHN/CHN, CHNS/CHNS, CHN/S, etc, for continued operation increasing your productivity. With the MVC you gain the flexibility to switch from helium to nitrogen or argon gas during Stand-By Mode.

Summary

The superior modularity and higher performance capabilities of the Thermo Scientific Flash*Smart* Analyzer make it an optimal solution for the quantitative determination of nitrogen, carbon, hydrogen, sulfur and oxygen, in terms of automation, flexibility and speed of analysis. Costs per analysis are reduced without compromising accuracy and reproducibility in all application fields, from research to quality control.

Find out more at **thermofisher.com/OEA**

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