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CHNS-ANALYSIS / O-ANALYSIS

References:

Instruction manual EA 1110

Elemental Analyzers (CE Instruments).

CHNS-Analysis

The determination of Carbon, Hydrogen, Nitrogen and Sulfur content is carried out by a simultaneous analysis.

1. Solid and liquid samples, weighed in tin capsules, are introduced into a vertical quartz reactor heated at a temperature of 1020 °C with a constant flow of helium stream.
2. A few seconds before introduction the helium stream was enriched with high purity oxygen.
3. The combustion gas mixture is driven through an tungsten oxide zone to achieved a complete quantitative oxidation following by a reduction step in a cupper zone to reduce nitrogen oxides and sulfuric anhydride to nitrogen and sulfurous anhydride.
4. The resulting four components N_2, CO_2, H_2O und SO_2 are separated in a chromatographic column and detected by a thermo conductivity detector.
5. The resulting signals, proportional to the amount of eluted gases, are analyzed by an automatic workstation which provides the sample elemental composition report.

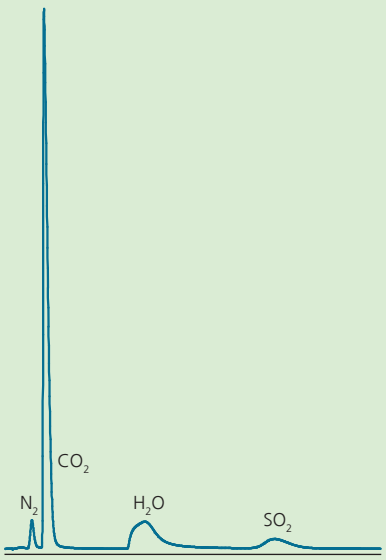

Fig. 1 CHNS-Analysis

O-Analysis

The determination of Oxygen is a separate analysis.

1. The samples are weighed in silver capsules.
2. These capsules are dropped into a pyrolysis reactor kept at a temperature of 1060 °C and crossed by a helium stream.
3. The samples are undergone an immediate pyrolysis
4. Pyrolysis gases are passed on a nickel-plated carbon layer that ensures a quantitative conversion of organic oxygen into carbon monoxide.
5. Carbon monoxide is separated from the other pyrolysis gases (CH_4, N_2, H_2 and other acid gases) in a GC column.
6. The gases are detected by a thermo conductivity detector.
7. The resulting signals, proportional to the amount of eluted gases, are analyzed by an automatic workstation which provides the sample elemental composition report.

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