

CATALYTIC COMBUSTION IONIZATION

DET introduces a GC detection method that selectively ionizes Methylene (CH₂) groups in Petroleum, Biofuel, and FAME samples

Principle of Detection

Fuel compounds elute sequentially from a GC column into a detector gas environment containing Oxygen. Compounds containing a sufficiently high concentration of CH₂ groups ignite a momentary burst of flame ionization as they impact a heated, catalytically active ceramic surface.

Important Consequences of this Chemical Detection

1. Demonstrates that high temperature oxidation of CH₂ groups is a primary process contributing to combustion ignition of Petroleum, Biofuel, and FAME constituents.
2. The temperature required for ignition of fuel combustion is lowered with increased catalytic activity of the ceramic.
3. GC chromatograms of different fuel samples provide fingerprint patterns showing the most combustible components of each sample.
4. Compounds with saturated Carbon bonds ignite in combustion more easily than compounds with Carbon double bonds.
5. Aromatic Hydrocarbon compounds are NOT easily ignited in combustion by this technique.