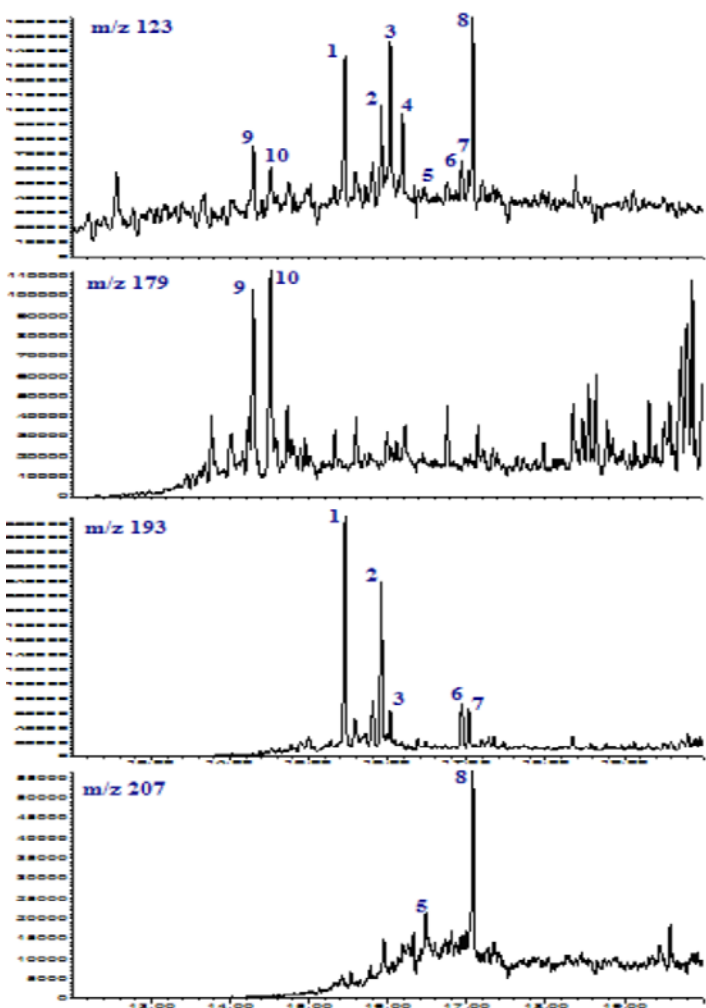


Sesquiterpane Biomarkers

Biomarkers have become increasingly important for identifying the source of spilled oil due to their specificity and high resistance to biodegradation. The biomarkers most commonly used in forensic investigations are the high molecular weight tri- and pentacyclic terpanes and steranes.



Bicyclic sesquiterpane confirmation ions

For lighter petroleum products, such as jet fuels and diesels, the refining processes remove most high molecular weight biomarkers from the original crude oil feedstock. The smaller bicyclic sesquiterpanes, however, are concentrated in these products. Sesquiterpanes are ubiquitous components of crude oils and ancient sediments.

The sesquiterpanes are monitored using m/z 123, a base fragment ion common to all sesquiterpanes. Confirmation ions include m/z 179, m/z 193, and m/z 207.

Examination of GCMS chromatograms of these characteristic ions of sesquiterpanes provides a highly diagnostic tool for correlation, differentiation and source identification of light to middle-range petroleum products, in comparison with the use of other hydrocarbon groups.