Figure 1
Micro-Hydrocarbon Analysis Protocol

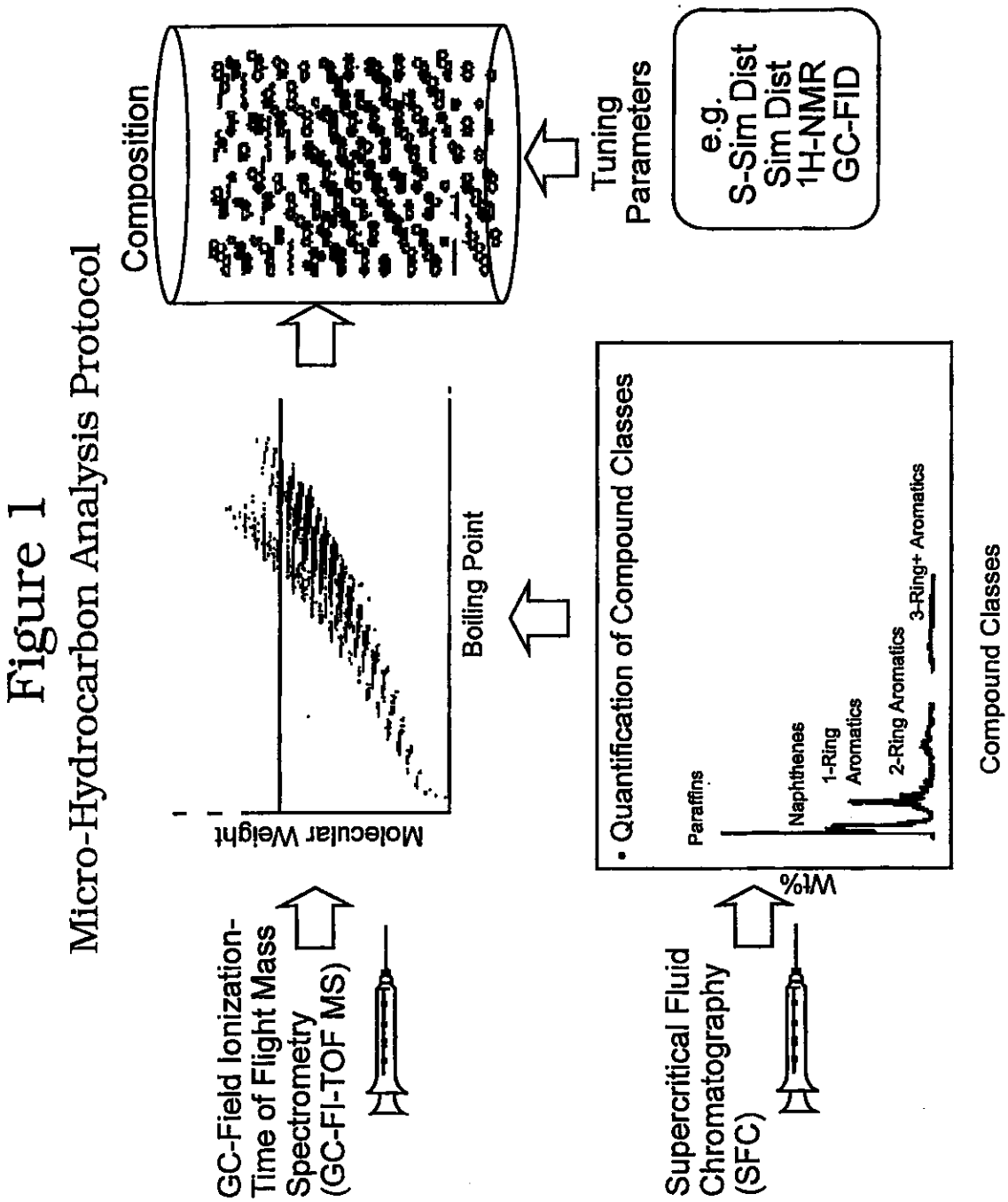


Figure 2

Analysis of an n-paraffin mixture showed that GC-FI-TOF MS can detect molecules boiling from 98°C to 545°C. Only molecule ion and corresponding 13C isotope were generated for each neutral molecule.

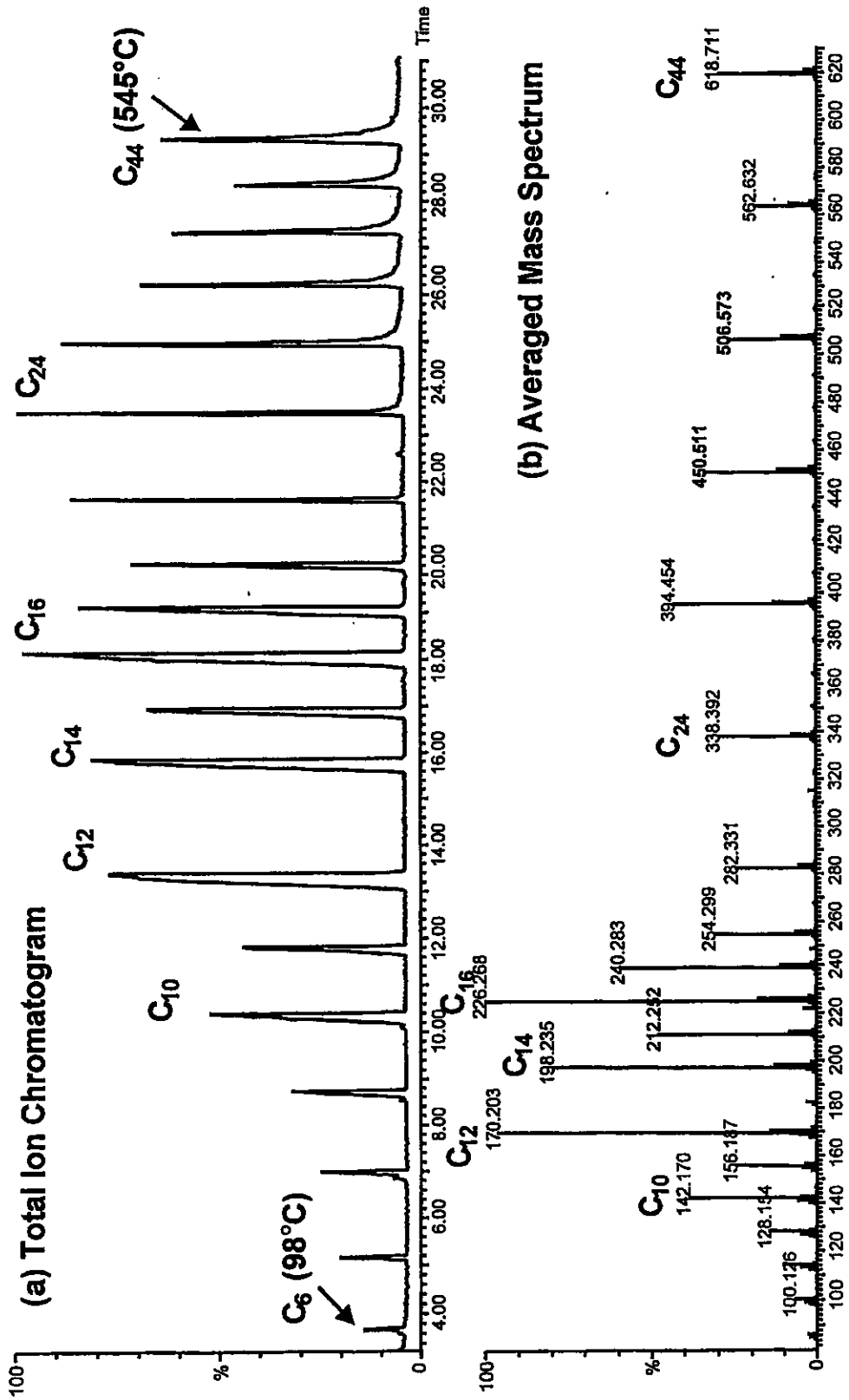


Figure 3

GC-FI-TOF MS resolves isomers and isobaric molecules

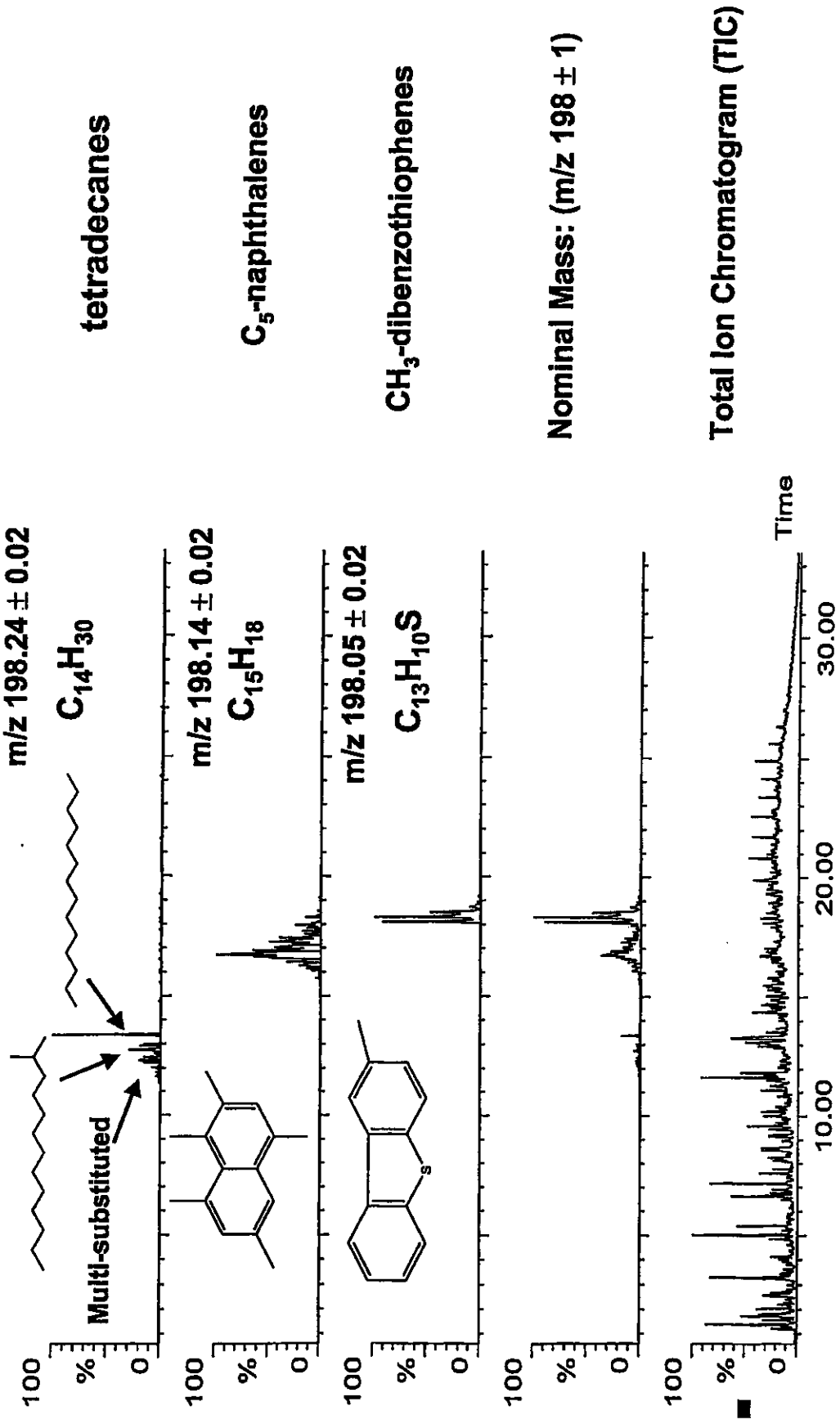


Figure 4

The combination of GC and MS separation resolves about 1500 molecules in a FCC total liquid produc

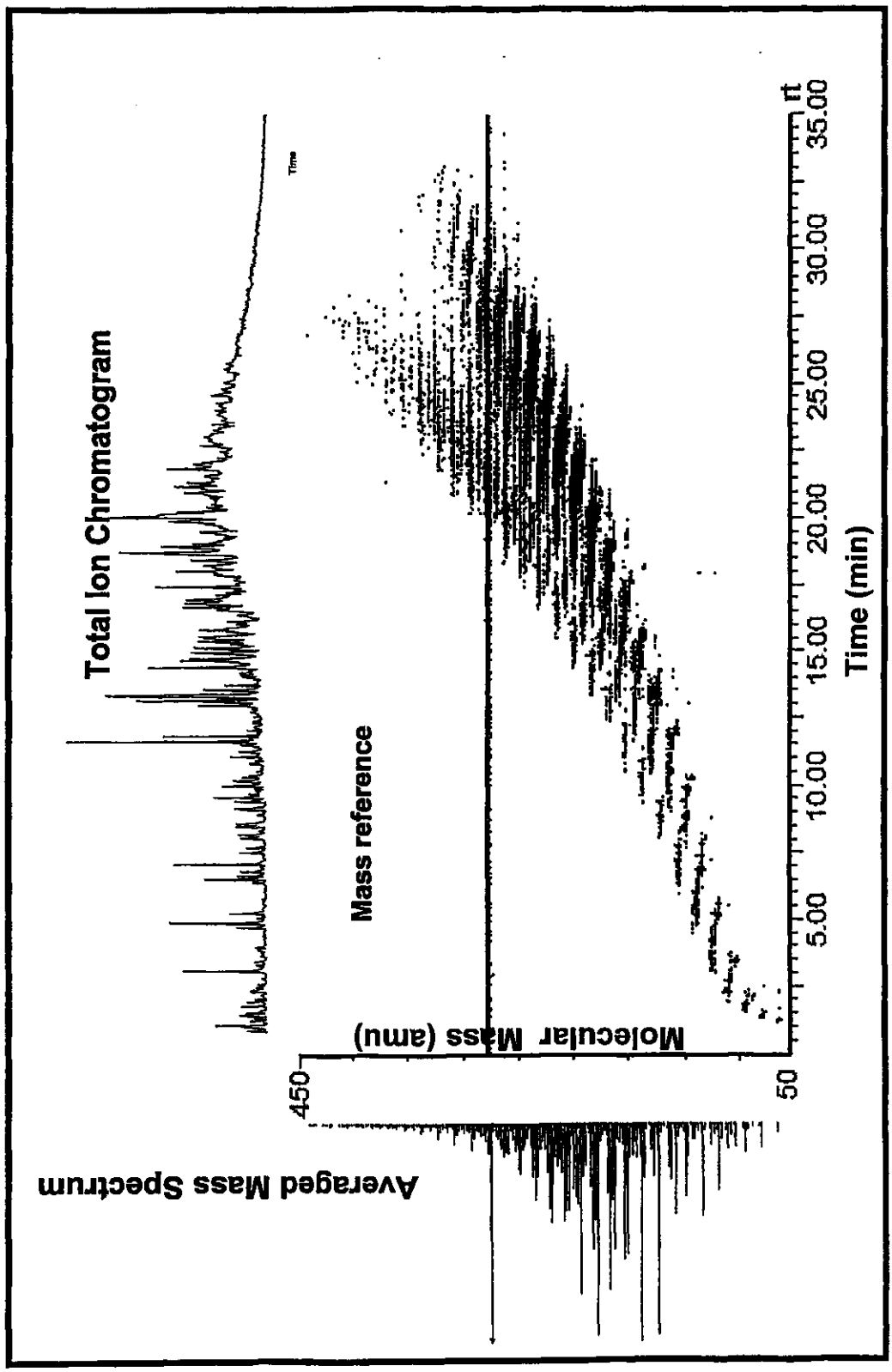


Figure 5

Determination of relative response factors of alkyl benzenes as a function of carbon numbers

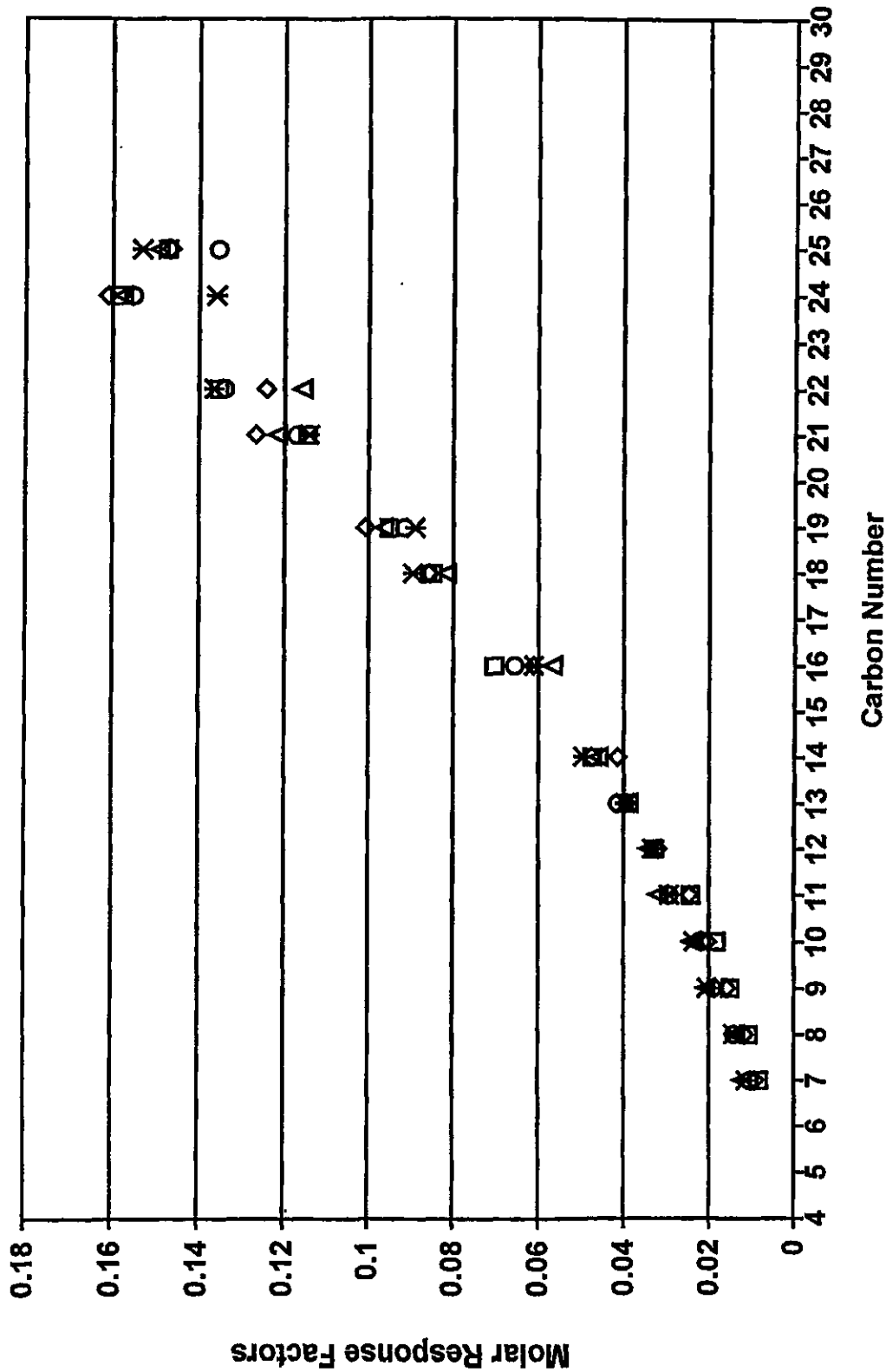


Figure 6

Homologous Series Cores Found in Petroleum

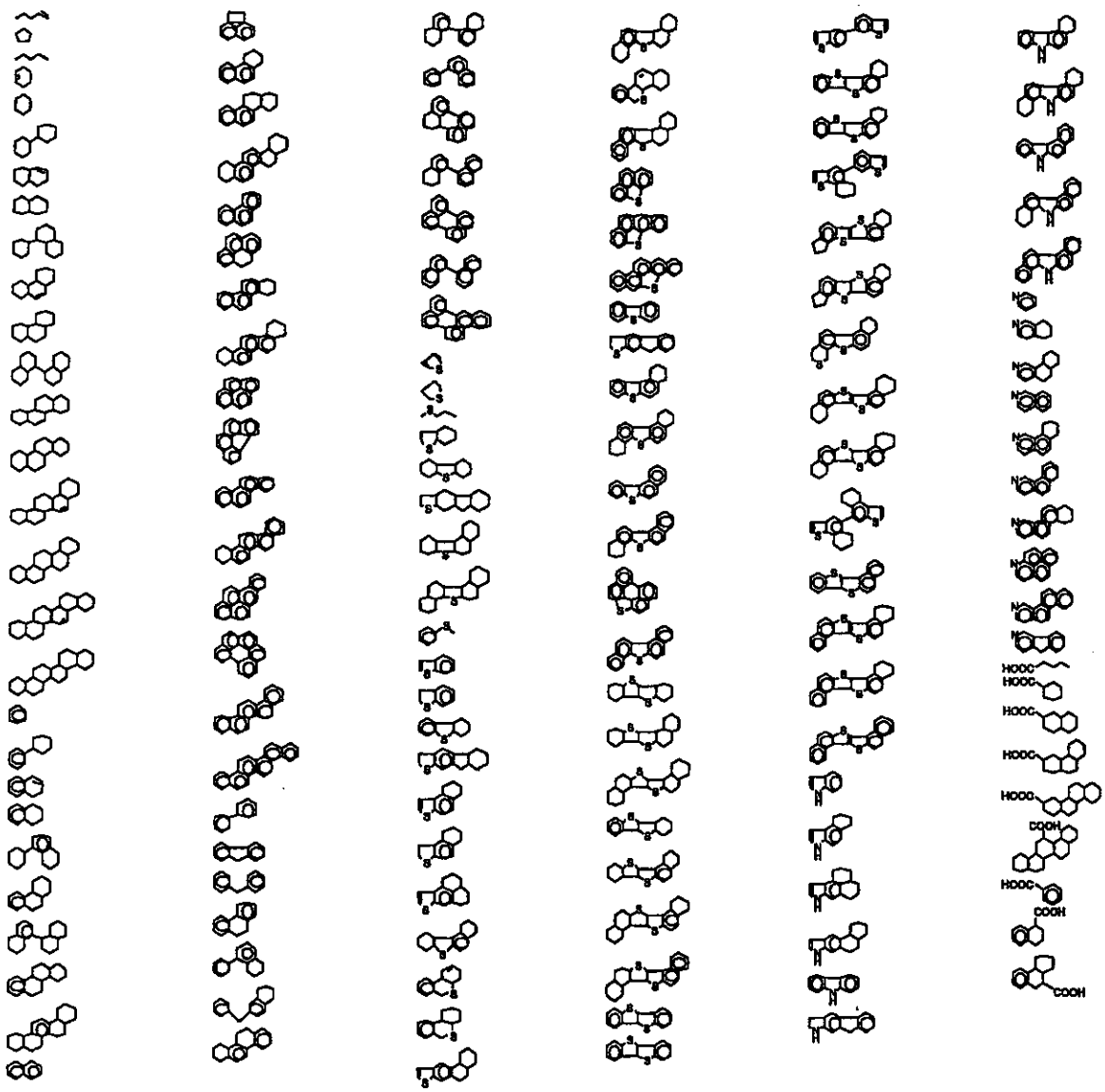


Figure 7
Sample Homologous Series

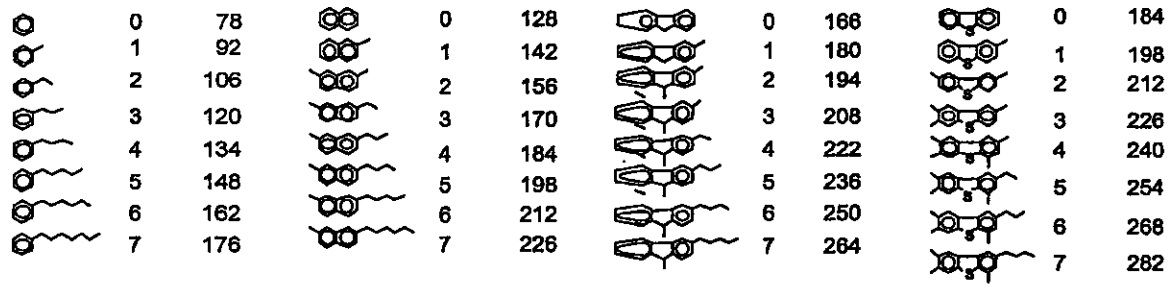


Figure 8
Saturate Cores

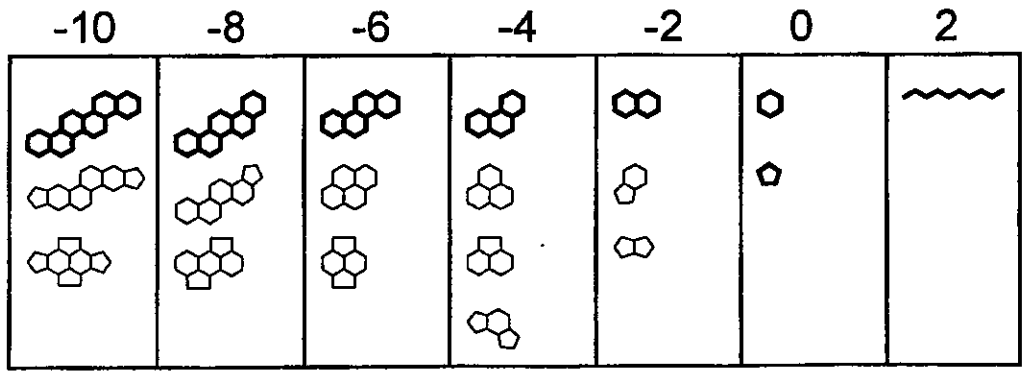


Figure 9
1-Ring Aromatic Cores

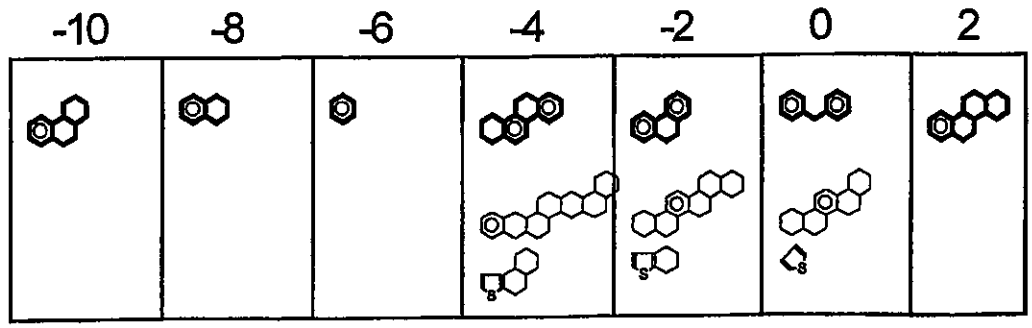


Figure 10

2-Ring Aromatic Cores

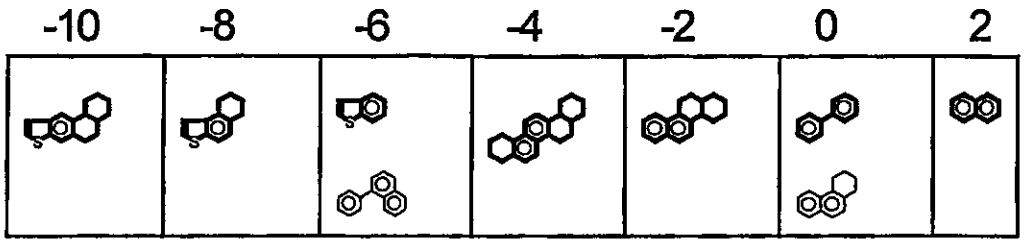


Figure 11

3-Ring Aromatic Cores

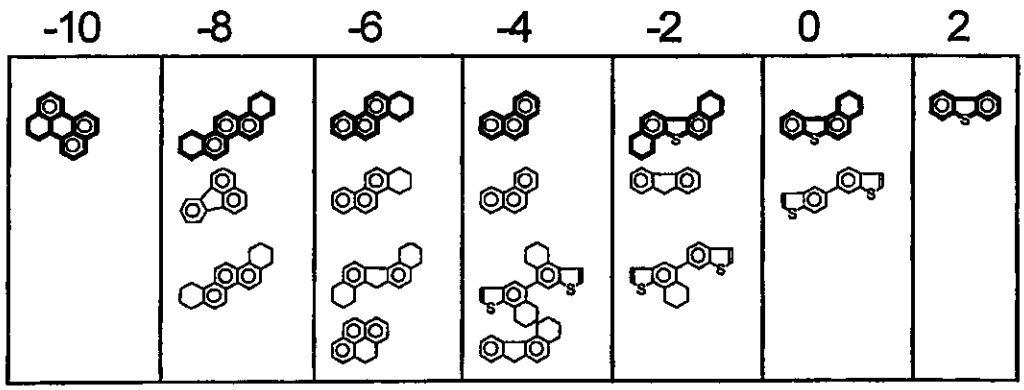


Figure 12

4-Ring Plus Aromatic Cores

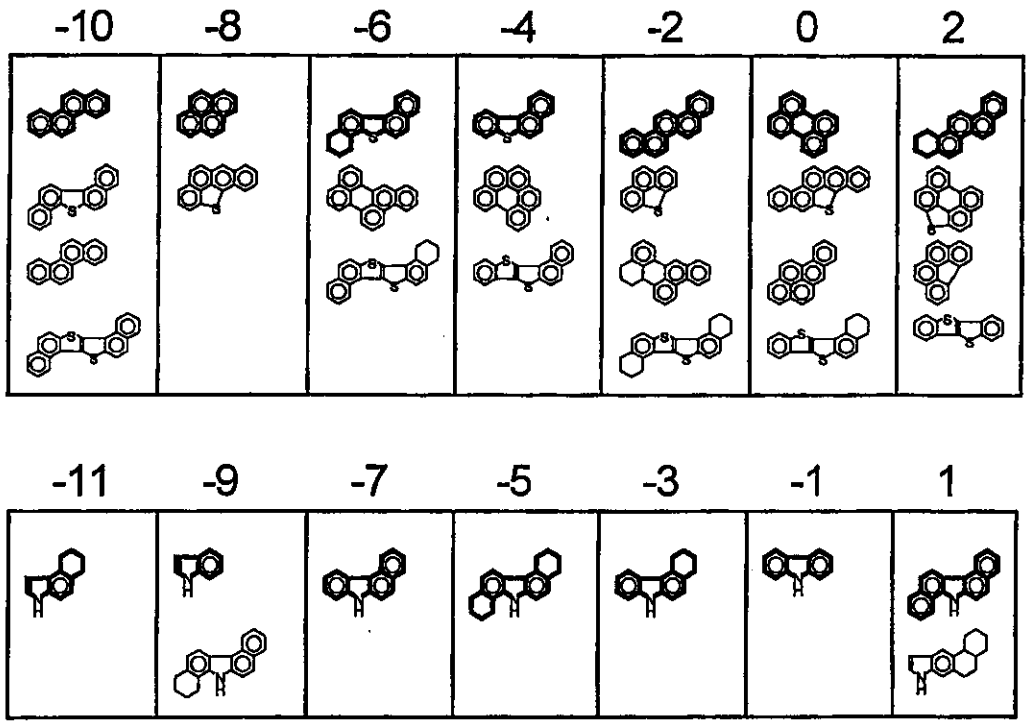


Figure 13

Sulfide Cores

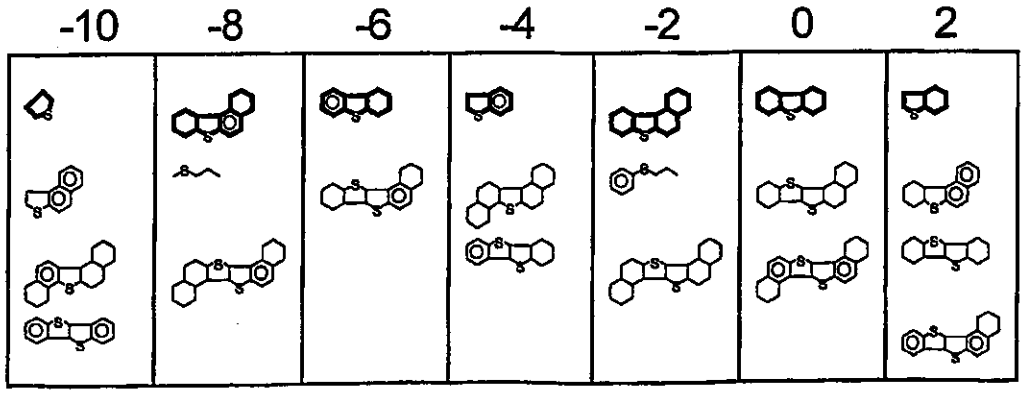


Figure 14

Polar Cores

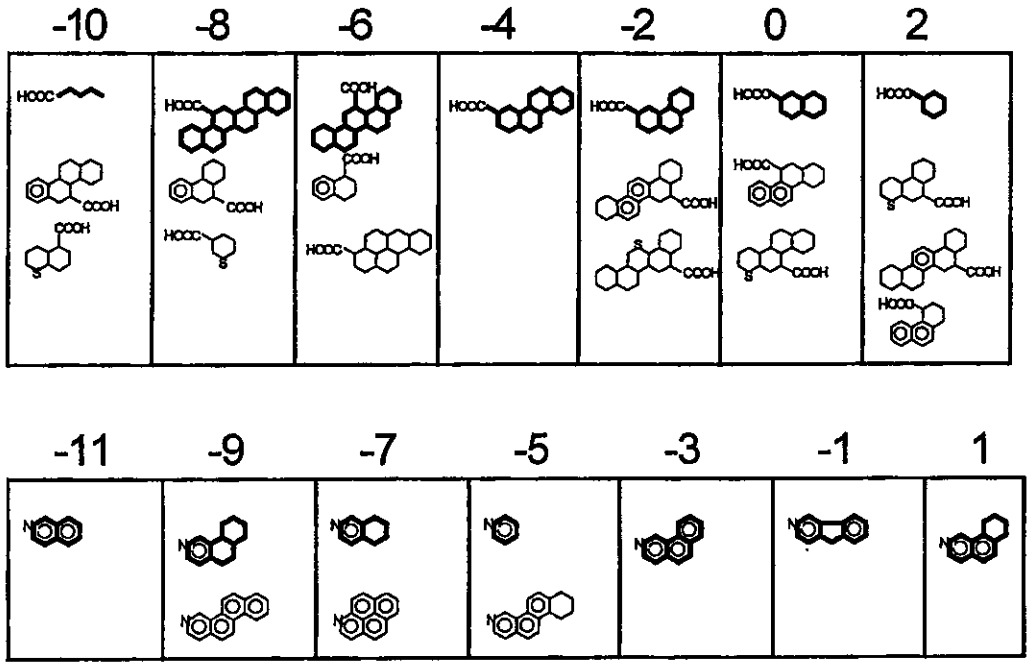


Figure 15

Olefin and Thiophene Cores

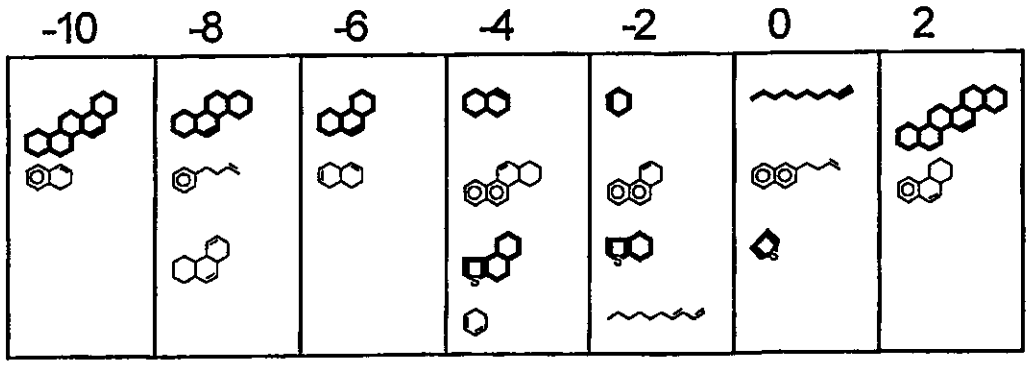


Figure 16a

Boiling Point Distribution

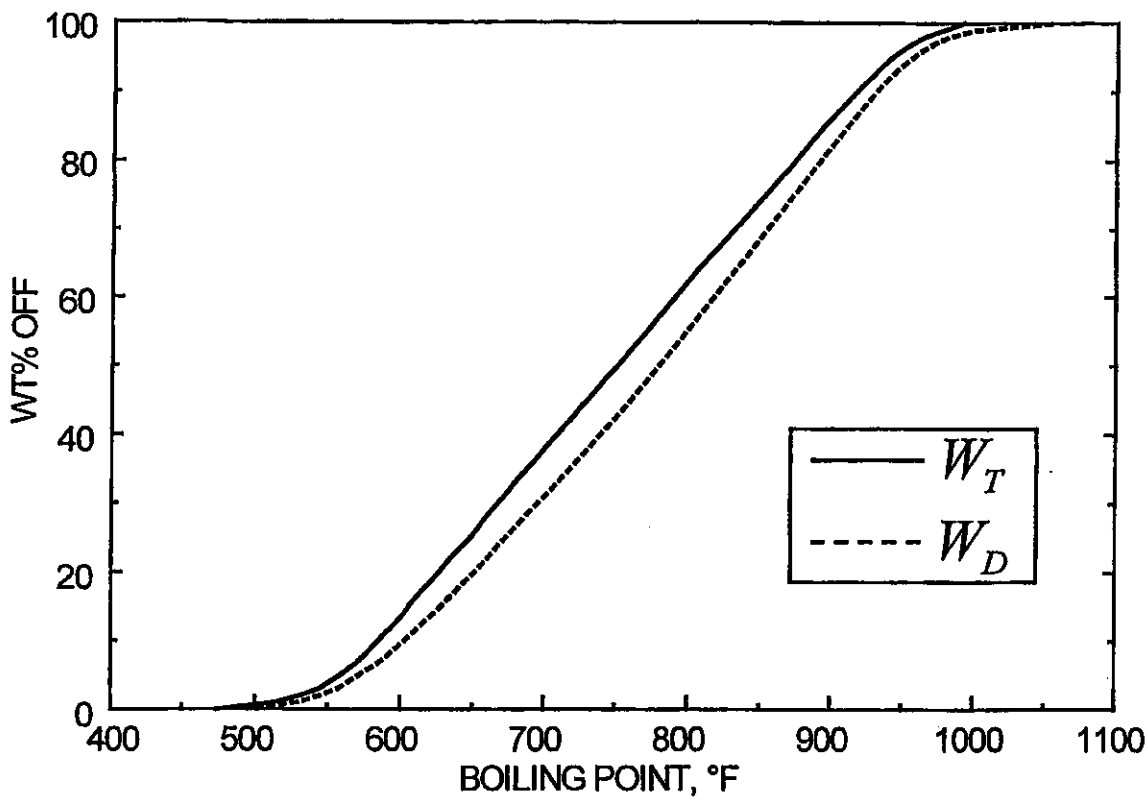


Figure 16b

Cumulative Distributions Wt vs Wp

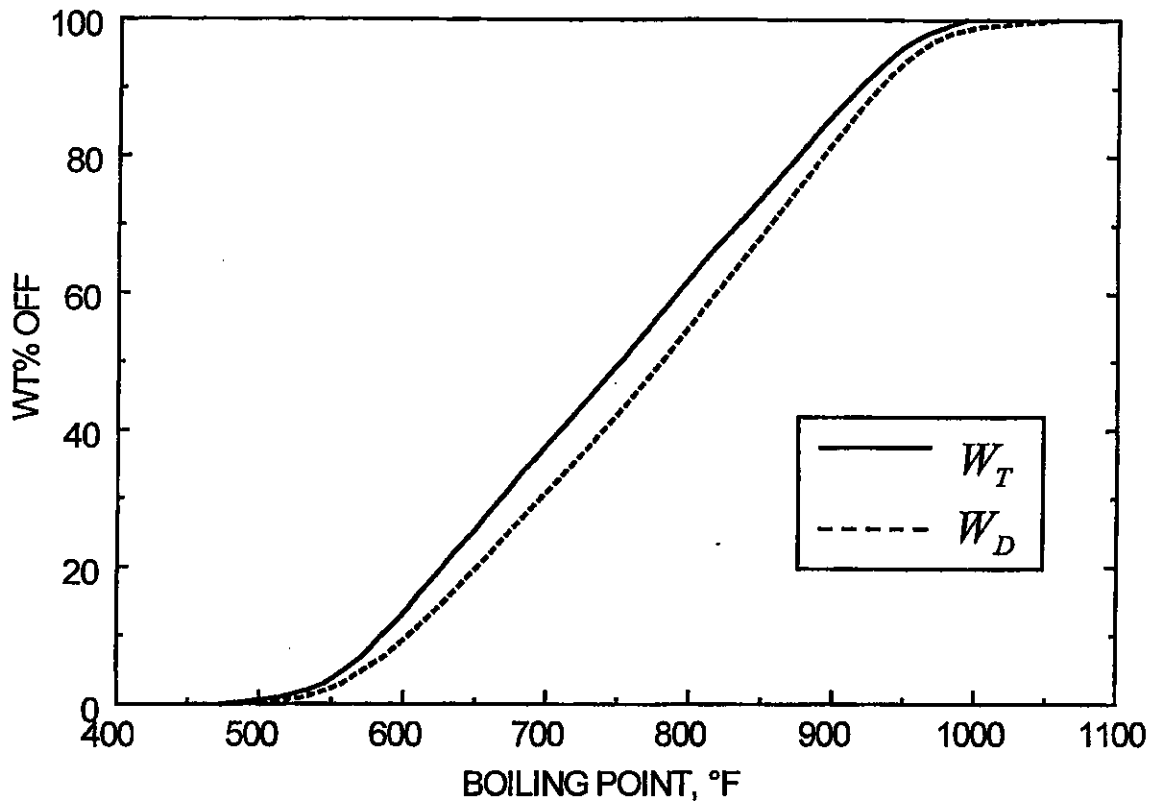


Figure 16c

Factor vs Boiling Point

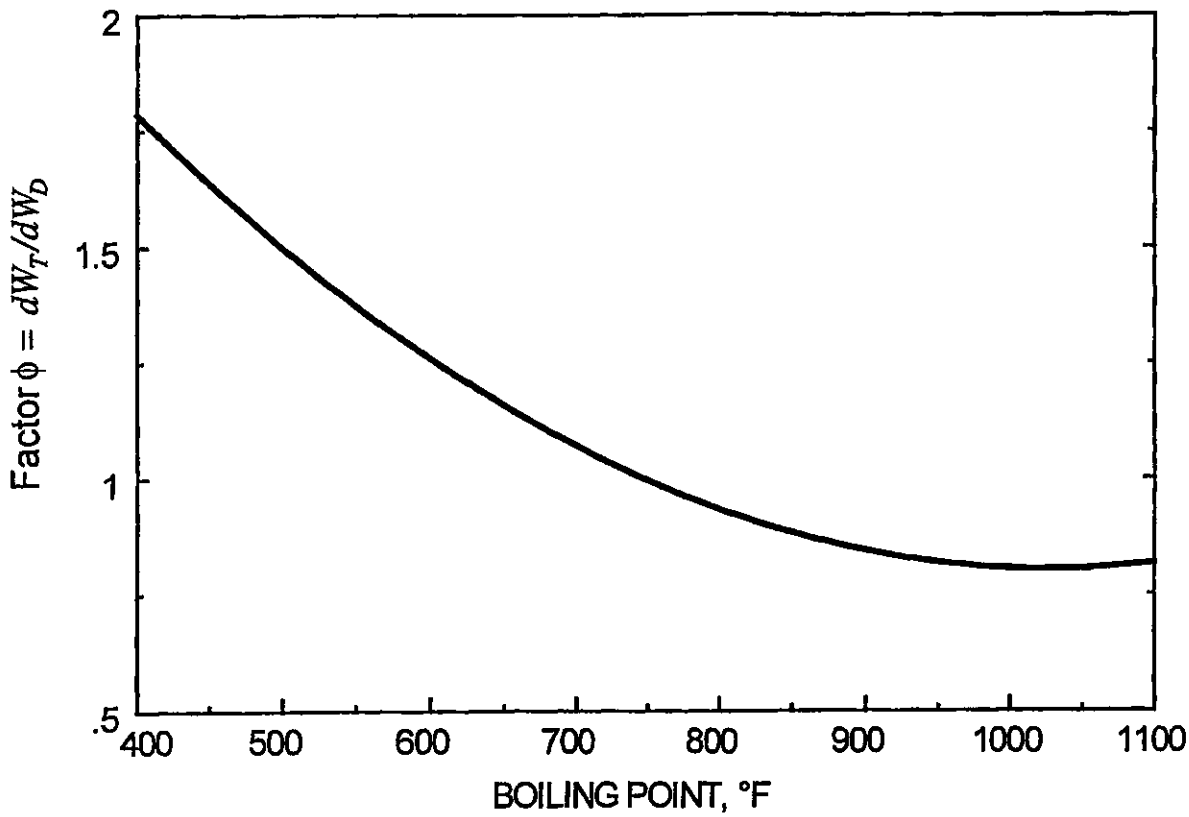


Figure 17

Iterative Model-of-Composition Synthesis Algorithm

