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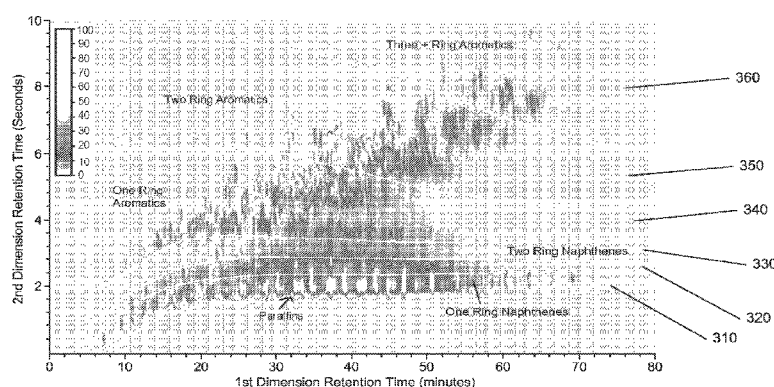


FIG. 3

(57) Abstract: Petroleum or other hydrocarbon samples can be analyzed in parallel by 1) GC-field ionization Time of Flight Mass Spectrometer (GC-FI-TOF MS) and 2) two dimensional gas chromatography (2D-GC) equipped with a flame ionization detector (FID). The combined techniques allow for improved quantitative characterization of the compounds within a hydrocarbon sample. The techniques can be combined by correlating the 2D-GC FID data with the GC-FI-TOF MS data based on correlation of compound classes, correlation of retention windows within a compound class, correlation of individual compounds, such as paraffins, or a combination thereof.