**CLAIMS:**

1. A method for the chromatographic ~~analysis of petroleum vacuum resid~~ separation of a de-asphalted oils (DAO) extracted from a petroleum vacuum resid boiling above 1000°F, comprising:

a) passing a mixture of ~~said vacuum resid~~ the de-asphalted oil (DAO) through a preparative high performance liquid chromatographic separation in columns including a polars column to separate polars; a main column to separate saturates from aromatics; and a sulfide column to separate sulfides ~~that separates said~~ to separate DAO into saturates, aromatics, sulfides, and polars and collecting the separated saturates, aromatics, sulfides, and polars fractions; and

b. passing said aromatics through a preparative high performance liquid chromatographic [3-(2,4-dinitroanilino-)propyl]-silica gel (DNAP-silica) column ~~to further separate~~ at sub-ambient temperature below 0°C to fractionate the aromatics into different Classes based upon the aromatic ring size and

collecting separated 1-Ring, 2-Ring, 3-Ring and 4+Ring-4 aromatic fractions.

2. The method of claim 1~~,~~ wherein the separated aromatic ring classes are composed of aromatic hydrocarbons plus thiophenic compounds.

~~3. The method of any prior claim, wherein said liquid chromatographic columns of step a) includes three sections: a polars column to separate polars; main column to separate saturates from aromatics; and a sulfides column to separate sulfides.~~

~~4.~~3. The method of claim ~~3,~~ 1 wherein said sulfides column of step a) includes a silver nitrate strong-cation-exchange ($Ag^+$/$SCX^-$-silica gel) column.

~~5.~~4. The method of ~~any of claims 3-4,~~ claim 1 wherein said polars column and said main column include silica-gel columns.

~~6.~~5. The method of ~~any prior~~ claim~~,~~ 1 wherein vacuum resid de-asphalted oil (DAO) has a sample size between about 2 grams and 4 grams.

~~7.~~6. The method of ~~any prior~~ claim~~,~~ 1 wherein said sample to silica gel has a ratio of 1:250.

~~8.~~7. The method of ~~any of claims 3-5,~~ claim 1 wherein the saturates are eluted after the sample passes through the three sections of step a).

~~9.~~8. The method of claim ~~8~~ 7 wherein the aromatics are eluted after the saturates are eluted and the polars and sulfides are retained by the polars and sulfide columns, respectively.

~~10.~~9. The method of claim ~~9~~ 8 wherein the polars and sulfides are backflushed to recover polars and sulfides after the aromatics are eluted.

~~11. The method of any prior claim, wherein, in step b), said aromatics are separated using the DNAP column at sub-ambient temperature up to -60°C.~~

~~12.~~10. The method of claim ~~11~~ 1 wherein said temperature at which the aromatics are separated in the (DNAP-silica) column is about -40°C.

~~13. The method of claim 1 wherein said aromatics are further fractionated into separate 1-ring, 2-ring, 3-ring, and 4+-ring aromatic fractions.~~

~~14.~~11. The method of claim ~~13~~ 1 wherein ~~said~~ the aromatics fraction separated in step a) has a sample amount of less than 300 mg.