CLAIMS

1. A method of producing aromatics and light olefins from a hydrocarbon feedstock, the method comprising the steps of:

(a) subjecting the hydrocarbon feedstock to a solvent extraction process in a solvent extraction unit;

(b) separating from the solvent extracted hydrocarbon feedstock obtained in step (a) a raffinate fraction comprising paraffins and a fraction comprising aromatics and naphthenes;

(c) hydrocracking said fraction comprising aromatics and naphthenes in a hydrocracking unit and separating reaction products from the hydrocracking into a high content aromatics fraction and a stream high in light paraffins. wherein said hydrocracking unit is a selective hydrocracking. and hydro-desulphurization unit suitable for preserving aromatic species whilst simultaneously dehydrogenating a portion of naphthenic species into aromatic species. hydrocracking non-aromatic species. including remaining naphthenic species and paraffinic species into LPG species and hydro-desulphurising any organo-sulphur species present with the non-aromatic species. wherein the operating conditions are WHSV between 0.5

and 3 hr^{-1}, a H_2:hydrocarbon ratio between 2:1 and 4:1, pressure between 689475 Pa and 2757902 Pa and reactor inlet temperature between 470 and 550°C:

(d) converting said raffinate fraction in a steam cracking unit into light olefins.

2. The method according to claim 1, wherein, before carrying out step (c), the fraction comprising aromatics and naphthenes is further fractionated by a stripping process to increase content of aromatics and naphthenes, wherein said stripping process is based on differences in relative volatility in the presence of said solvent.

3. The method according to claim 1, wherein, before carrying out step (c), the fraction comprising aromatics and naphthenes is further fractionated by recovering the solvent from the solvent extraction process.

4. The method according to claim 2, wherein the materials stripped from the fraction comprising aromatics and naphthenes are returned to the solvent extraction process of step (a).

5. The method according to claim 2, wherein the materials stripped from the fraction comprising aromatics and naphthenes are sent to steam cracking unit of step (d).

6. The method according to claim 1, further comprising recovering a pygas containing byproduct from the steam cracking unit and returning said recovered pygas containing byproduct to said solvent extraction process.

7. The method according to claim 1, further comprising recovering a pygas containing byproduct from the steam cracking unit and feeding said pygas containing byproduct to said hydrocracking unit.

8. The method according to claim 6, further comprising feeding said recovered solvent to the solvent extraction process at a position above inlet points of both recovered pygas containing byproduct and the hydrocarbon feedstock in said solvent extraction unit.

9. The method according to of claim 6. further comprising feeding said hydrocarbon feedstock to the solvent extraction process at a position above an inlet point of recovered pygas containing byproduct in said solvent extraction unit.

10. The method according to claim 1, further comprising recovering an LPG fraction from said hydrocracked high content aromatics fraction and returning said LPG fraction to the steam cracking unit.

11. The method according to claim 1, further comprising recovering the solvent from the raffinate fraction comprising paraffins and returning said solvent recovered into the solvent extraction process.

12. The method according to claim 1, wherein the hydrocarbon feedstock is a member selected from the group consisting of a whole range naphtha having a boiling point lower than 200°C and kerosene.

13. The method according to claim 12, wherein the hydrocarbon feedstock is the group of whole range naphtha having a boiling point lower than 200°C.

14. A method of producing aromatics and light olefins from a hydrocarbon feedstock, the method comprising the steps of:

(a) subjecting the hydrocarbon feedstock to a solvent extraction process in a solvent extraction unit;

(b) separating from the solvent extracted hydrocarbon feedstock obtained in step (a) a raffinate fraction comprising paraffins and a fraction comprising aromatics and naphthenes;

(c) hydrocracking said fraction comprising aromatics and naphthenes in a hydrocracking unit and separating the reaction products into a high content aromatics fraction and a stream high in light paraffins, wherein said hydrocracking unit is a selective hydrocracking and hydro-desulphurization unit suitable for preserving aromatic species whilst simultaneously dehydrogenating a portion of naphthenic species into aromatic species, hydrocracking non-aromatic species, including remaining naphthenic species and paraffinic species, into LPG species and hydro-desulphurising any organo-sulphur species present with the non-aromatic species, wherein the operating conditions are WHSV between 0.5 and 3 hr^{-1}, a H_2:hydrocarbon ratio between 2:1 and 4:1, pressure between 689475 Pa and 2757902 Pa and reactor inlet temperature of 550°C;

(d) converting said raffinate fraction in a steam cracking unit into light olefins.

15. The method according to claim 1, wherein, before carrying out step (c). the fraction comprising aromatics and naphthenes is further fractionated by a stripping process to increase a content of aromatics and naphthenes, said stripping process resulting in a solvent stream rich in aromatics and naphthenes and a stream comprising stripped light paraffins, in which said stripping process is based on differences in relative volatility in the presence of said solvent.

16. The method according to claim 15, wherein, before carrying out step (c), the solvent stream rich in aromatics and naphthenes is further fractionated by recovering the solvent resulting in a solvent rich stream and an extract comprising aromatics and naphthenes, and returning said solvent rich stream to said solvent extraction process of step (a), in which said fractionation is based on differences in boiling points.

17. The method according to claim 15, wherein the stream comprising stripped light paraffins is returned to the solvent extraction process of step (a).

18. The method according to claim 1, wherein there is no hydrodesulphurization ahead of the extraction process.