CLAIMS

1. A process for converting a high-boiling hydrocarbon feedstock into lighter boiling hydrocarbon products, said lighter boiling hydrocarbon products being suitable as a feedstock for petrochemicals processes, said converting process comprising the following steps of:

feeding a hydrocarbon feedstock having a boiling point of > 350 deg Celsius to a cascade of hydrocracking units comprising at least three hydrocracking units, wherein the at least three hydrocracking units are preceded by a hydrotreating unit, wherein the bottom stream of said hydrotreating unit is used as a feedstock for said first hydrocracking unit, the bottom stream of said first hydrocracking unit is used as a feedstock for said second hydrocracking unit, the bottom stream of said second hydrocracking unit is used as a feedstock for said third hydrocracking unit,

wherein the pressure for the first hydrocracking stage is 150 to 200 Barg operating pressure, the pressure for the second hydrocracking stage is 100 to 200 Barg operating pressure and the pressure for the third hydrocracking stage is 100 to 300 Barg operating pressure,

wherein the bottom stream of a hydrocracking unit as a feedstock for a subsequent hydrocracking unit is such that said feedstock for a subsequent hydrocracking unit is heavier than the feedstock of a previous hydrocracking unit in the cascade of hydrocracking units,

wherein the process conditions in each hydrocracking unit(s) are different from each other, in which the hydrocracking conditions from the first to the subsequent hydrocracking unit(s) increase from least severe to most severe,

wherein the temperature prevailing in said hydrotreating unit is higher than in said first hydrocracking unit, wherein the temperature in said hydrotreating unit is in the range 300 to 400 ^{0}C and the temperature in said first hydrocracking unit is in the range 280 to 300 ^{0}C,

wherein the temperature in the cascade of hydrocracking units increases, wherein the temperature prevailing in said third hydrocracking unit is higher than in said hydrotreating unit, wherein the temperature in said third hydrocracking unit is in the range 440 to 490 ^{0}C, and

processing the lighter boiling hydrocarbon products from each hydrocracking units as a feedstock for one or more petrochemicals processes.

2. The process according to claim 1, in which said hydrocarbon feedstock having a boiling point of > 350 deg Celsius is a member chosen from the group of a bottom stream from a crude oil distillation, tar sand oil, shale oil and bio based materials, or a combination thereof.

3. The process according to claims 1-2, wherein the petrochemicals processes comprise FCC (Fluid Catalytic Cracking), SC (Steam Cracking), dehydrogenation units, alkylation units, isomerization units and reforming units, or combinations thereof.

4. The process according to claims 1-2, wherein the lighter boiling hydrocarbon products from all hydrocracking units are combined and processed as a feedstock for one or more petrochemicals processes.

5. The process according to claim 4, wherein the lighter boiling hydrocarbon products thus collected are separated into individual streams by a distillation process, wherein the individual streams thus separated are each sent to individual petrochemicals processes.

6. The process according to any one or more of the preceding claims, further comprising separating the lighter boiling hydrocarbon products into (i) a first stream containing the unused hydrogen, possible H2S, NH3, H2O and methane and (ii) a second stream comprising C2 and C2+ products with boiling points below 350°C

7. The process according to claim 6, wherein the first stream is returned to a hydrocracking unit, especially to the previous hydrocracking unit in the cascade of hydrocracking units.

8. The process according to any one of claims 1-7, wherein the particle size of the catalyst present in the cascade of hydrocracking units decreases from the first hydrocracking unit to the subsequent hydrocracking unit(s).

9. The process according to any one or more of the preceding claims, wherein the reactor type design of the hydrocracking unit(s) is chosen from the group of the fixed bed type, ebullated bed reactor type and the slurry phase type.

10. The process according to claim 1, wherein the reactor type design of said hydrotreating unit is of the fixed bed type.

11. The process according to claim 1, wherein the reactor type design of said first hydrocracking unit is of the ebullated bed reactor type.

12. The process according to claim 1, wherein the reactor type design of said second hydrocracking unit is of the slurry phase type.

13. The process according to any one or more of the preceding claims, wherein the bottom stream of the final hydrocracking unit is recycled to the inlet of said final hydrocracking unit.

14. The process according to any one or more of the preceding claims, wherein the hydrocarbon feedstock to one or more of the hydrocracking unit(s) of the cascade of hydrocracking unit(s) comprises a heavy stream originating from steam cracker unit and/or refinery.