

CLAIMS

1. A process for conversion of a hydrocarbonaceous feed comprising at least 20 ppmw, 100 ppmw or 500 ppmw and less than 1000 ppmw, 5000 ppmw or 10000 ppmw halides, to a hydrocarbon product stream by hydrotreatment, in the presence of a material catalytically active in hydrotreatment and an amount of hydrogen, wherein said hydrocarbon product stream comprises an amount of ionic halides, wherein said hydrocarbon product stream is combined with an amount of wash water, wherein the weight ratio between wash water and hydrocarbon product stream water is above 1:10, 1:5 or 1:2 and below 1:1, 2:1 or 10:1, and wherein the combined hydrocarbon product stream and wash water are separated in a non-polar stream of hydrocarbon product and a polar stream of wash water comprising ionic halides, such that from 50%, 90% or 99% to 100% of said ionic halides are transferred from said hydrocarbon product stream to the polar stream of wash water comprising ionic halides, characterized in said polar stream of wash water comprising ionic halides being directed to a means of concentrating, to provide a stream of purified water and a stream of brine having a concentration of ionic halides being more than 2 times, 5 times or 10 times and less than 50 times or 100 times above that of the polar stream of wash water comprising ionic halides.
2. A process according to claim 1, wherein said means of concentrating is an evaporator, heating the polar stream of wash water comprising ionic halides, to evaporate an amount of water, constituting said stream of purified water.
3. A process according to claim 2, wherein said evaporator is a falling film evaporator configured for flowing the polar stream of wash water comprising ionic halides over a heated surface, and further configured for collecting the evaporated water and directing it as the stream of purified water.

4. A process according to claim 1, wherein said means of concentration is a membrane separator or a reverse osmosis separator.
5. A process according to claim 1,2,3 or 4, wherein the pH of said polar stream of wash water comprising ionic halides is adjusted to a value between 6.5 and 9 by addition of an amount of base or acid to either the stream of wash water or the polar stream of wash water comprising ionic halides.
6. A process for conversion of a raw feed stream rich in molecules comprising C, H and a halide, and optionally O, N, Si, and other elements, such as a mixture rich in plastic, lignin, straw, lignocellulosic biomass or aquatic biological material, said process involving
- a. a step of thermal decomposition of said raw feed stream, to provide a precursor to a hydrocarbonaceous feed or a hydrocarbonaceous feed,
 - b. optionally a step of pre-treatment, purifying the precursor to hydrocarbonaceous feed to provide a hydrocarbonaceous feed
 - c. a hydrotreatment step for converting the hydrocarbonaceous feed in the presence of hydrogen, in accordance with any of the previous claims, to provide a hydrocarbon product stream.
7. A process according to claim 6, followed by the step of directing the hydrocarbon product stream to a steam-cracking process.
8. A system for hydrotreatment of a hydrocarbonaceous stream comprising
- a. a hydrotreatment reactor containing a material catalytically active in hydrotreatment, said hydrotreatment reactor comprising an inlet for inletting a hydrogen enriched hydrocarbon stream and an outlet for outletting a first product stream,
 - b. a means of mixing having two inlets and an outlet,
 - c. a means of phase separation, having an inlet and a liquid polar phase outlet, liquid non-polar phase outlet and gas phase outlet,
 - d. a means of concentrating, having an inlet, a concentrated brine outlet and a purified water outlet, wherein said outlet for outletting a first product stream is in fluid communication with a first inlet of the means of mixing,

wherein the outlet of the means of mixing is in fluid communication with the inlet of the means of phase separation, and the liquid polar phase outlet of the means of phase separation is in fluid communication with the inlet of the means of concentrating, wherein the purified water outlet of the means of concentrating is in fluid communication with a second inlet of the means of mixing optionally in combination with a further source of purified water

5 and wherein the liquid non-polar phase outlet of the means of phase separation is configured for providing a hydrocarbon product.