CLAIMS

1. A method for separating C8 aromatics from a hydrocarbon stream (12), the method comprising the steps of:

(a) introducing the hydrocarbon stream (12) to a first fractionation column (14) at a feed point (16);

(b) fractionating the hydrocarbon stream (12) in the first fractionation column (14) into a sidedraw fraction (22) comprising C8 aromatics, a bottom fraction (26) comprising C8 and C9+ aromatics, and an overhead fraction (18) comprising $C7^-$ hydrocarbons;

(c) separating the bottom fraction (26) of the first fractionation column (14) into a heavy sidedraw fraction (34) comprising C9 and C10 aromatics, a heavy overhead fraction (32) comprising C8 aromatics, and a heavy bottom fraction (36) comprising C11+ aromatics, in a second fractionation column (30);

(d) combining the heavy overhead fraction (32) of the second fractionation column (30) with the sidedraw fraction(22) of the first fractionation column (14) to form a combined stream (40) of C8 aromatics;

(e) separating the combined stream (40) of C8 into a selected xylene isomer and non-selected xylene ;

(f) subjecting the non-selected xylene into an isomerization unit (50) to produce an isomerized stream (54) comprising an equilibrium distribution of xylene isomers; and

(g) recycling the isomerized stream (54) to step (a),

wherein the hydrocarbon stream (12) in step (a) includes a C8+ aromatics stream or a reformate of C8+ aromatics along with an isomerized stream (54) of the step (f), the first and the second fractionation columns (14,30) are located upstreams of an aromatics separation unit.

2. The method of claim 1 further comprising:

withdrawing the sidedraw fraction (22) from the first fractionation column (14) at a draw point (24) located above the feed point.

3. The method of claim 1 further comprising disproportionating and transalkylating toluene (56) with the C9 aromatics and C10 aromatics in the heavy sidedraw fraction (34) to produce benzene and xylene (98).

4. The method of claim 1, wherein the a reformate of C8+ aromatics is formed from a reformed naphtha feedstream (70).

5. The method of claim 1 further comprising:

contacting the sidedraw fraction (22) of the first fractionation column (14) with an adsorbent configured to adsorb a selected xylene isomer from the sidedraw fraction (22) of the first fractionation column (14); and

contacting the adsorbent with a deadsorbent (56) to desorb the selected xylene isomer from the adsorbent.

6. The method of claim 1 further comprising:

contacting the sidedraw fraction (22) of the first fractionation column (14) with an adsorbent configured to adsorb paraxylene from the sidedraw fraction (22) of the first fractionation column (14); and

contacting the adsorbent with a deadsorbent (56) to desorb the paraxylene from the adsorbent.

7. The method of claim 1, wherein the step (e) further comprising:

contacting the combined stream (40) of C8 aromatics with an adsorbent configured to adsorb a selected xylene isomer from the combined stream (40) of C8 aromatics; and

contacting the adsorbent with a deadsorbent (56) to desorb the selected xylene isomer from the adsorbent.