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(54) Title: ADVANCED ADSORPTIVE SEPARATION PROCESSES FOR MOLECULAR CLASS SEPARATION

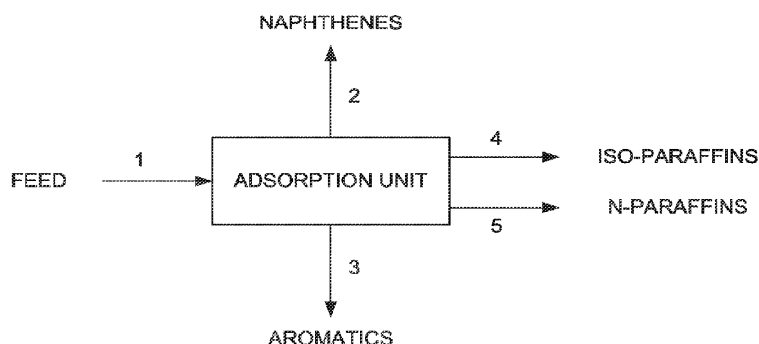


FIG. 1.

(57) Abstract: A method for separating classes of hydrocarbon compounds from a feed stream including a hydrocarbon mixture is disclosed. The method includes the steps of passing a feed stream through a plurality of separation units arranged in a series in any order, wherein each separation unit has an adsorbent material; and separating classes of hydrocarbon compounds from the feed stream. When one of the plurality of separation units comprises an adsorbent material that is a metal organic framework selected from a zirconium, hafnium, cerium, or titanium-based metal organic framework, then another plurality of separation units includes an adsorption material that is different from the metal organic framework. The method is conducted in a liquid phase. The method can also use a single separation unit with a continuous cyclic bed apparatus. The method can be combined with refining and downstream processes.

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