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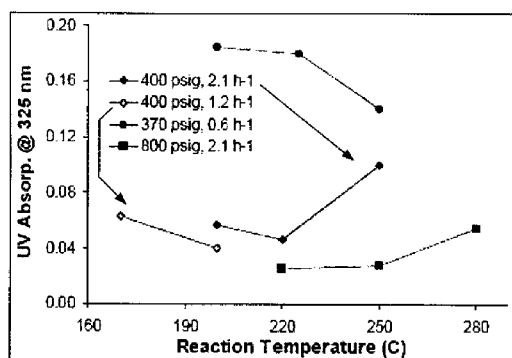


FIG. 5

(57) **Abstract:** Systems and methods are provided for hydroprocessing a petroleum fraction, such as a bottoms fraction from a fuels hydrocracking process, to generate a lubricant base oil. A fuels hydrocracking process typically has less stringent requirements for the sulfur and nitrogen content of a feed as compared to a lubricant base oil. Additionally, depending on the nature of the feed for the fuels hydrocracking process, the bottoms fraction may contain a relatively high level of aromatics compounds. The aromatic content of such a petroleum fraction can be reduced using a aromatic saturation stage with multiple catalyst beds, or alternatively using a reactor (or reactors) with multiple aromatic saturation stages. The catalysts in the various beds or stages can be selected to provide different types of aromatic saturation activity. An initial bed or stage can provide activity for saturation of 1-ring aromatics in the petroleum fraction. One or more subsequent beds or stages, operating at successively lower temperature, can then be used to reduce the multiple-ring aromatic content of the petroleum fraction.