A METHOD FOR PREPARING FUEL BY USING BIOLOGICAL OILS AND FATS

Technical Field

[0001] The present invention relates to the field of energy technology, and especially to a method for preparing fuel by using biological oils and fats.

Background Arts

[0002] People are compelled to search for renewable clean fuel as petrochemical fuel is in shortage more than ever and pollutes the environment upon combustion. In a substitutive solution for petrochemical fuel, producing clean fuel from renewable biological oils and fats (such as soybean oil, Jatropha oil, lard, food waste oil) is considered as a green, renewable, carbon-neutral technical route.

[0003] Biological oils and fats, such as vegetable oils and fats, which are fats obtained by extracting seeds, the flesh of fruit, and other parts of plants, contain a lot of triglycerides with long-chain carbons and free fatty acids. According to their usage, biological oils and fats can be divided into two categories – to be used for food and to be used in industry. Those in liquid at room temperature are called oils, while those in solid and semi-solid at room temperature are called fats. The components of biological oils and fats are quite different from those of crude oil (including waste lubricating oil) mainly in that, for biological oils and fats, the content of oxygen is high and the contents of sulfur, nitrogen and aromatic hydrocarbons are low; while for crude oil, contents of sulfur, nitrogen and aromatic hydrocarbons are high and content of oxygen is low. Therefore, due to the differences of their components, methods for producing fuel from crude oil as raw material are not applicable to the processing of biological oils and fats as raw materials.

[0004] Currently, there are some technical solutions, which are used or will be used in industry, for preparing biomass fuel (such as biodiesel) from biological oils and fats. Generally, such technical solutions are classified into two categories: process of transesterification and process of direct hydrogenation. Many research results and technical reports involve in the discussion on the foregoing techniques.

[0005] Chinese Patent Application Publication No. CN 101328418A teaches a method for manufacturing biodiesel by using vegetable oils. However, a great amount of ethanol is consumed firstly to form fatty acid ester through reacting with the vegetable oil. Chinese Patent Application Publication No. CN1858161A teaches a method for preparing biodiesel from palm oil, in which, it is required that the raw material of palm oil proceed with the procedures, such as degumming, deacidifying and dehydrating, etc. before the step of esterifying with low-carbon alcohols. Chinese

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