

<<生物能源技术与工程化>>

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内容概要

《生物能源技术与工程化（英文版）》共分五部分，分别是生物能源述评；第一篇生物气体燃料，包括内循环厌氧反应器的研究及应用，秸秆预处理及其厌氧发酵，秸秆气化及其应用；第二篇生物液体燃料，包括生物质气化合成甲醇、纤维乙醇和生物柴油；第三篇生物质固体成型燃料，包括成型基础研究、设备研究及其应用研究；第四篇生物质资源。

《生物能源技术与工程化（英文版）》主要读者对象为生物能源、环境工程、农业工程、生物技术等专业的研究生、本科生、研究人员，以及从事生物能源开发利用的工程技术人员。

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无

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Although China has developed a batch of biodiesel manufacturing enterprises , and has certain productivity , their current annual output still are all under 20 thousand tonnes , and furthermore have not formed the economic scale over 0.1 Mt. The main reasons which cause the development barriers of biodiesel industry in the production scale include : scarcity of raw materials and defects in technology of biodiesel industrialized production; such additives as antioxidant and improving agent of flow performance at low temperature which match with biodiesel need to be developed; there are deficient researches on refined chemical products with high additional value by biodiesel used as raw material. At present , China adopts mainly liquid acid and alkali catalytic transesterification for biodiesel industrialized production , which have such drawbacks as that the production process is complex; it is difficult to separate products from reaction substances and catalysts; the catalysts can not be reused; the discharges of alkaline or acidic waste liquids cause more serious environmental pollution , the production process can not be continuous , accordingly the cost is too high. In order to overcome the problems mentioned above , many scholars made a great lot of researches centered on the two aspects including the developments of solid catalyst and reactor. The researches on solid catalyst focused mainly on the development and application of such solid heterogeneous catalysts as immobilized-lipase , immobilized-cell and solid acidic and alkaline catalyst , provided the basis for reusing the catalyst , reducing the catalyst consumption and the environmental pollution in biodiesel production , and realizing the continuous production of biodiesel. The new continuous-catalyzing reactor is also the hot topic in current research , the reactors for biodiesel continuous production are relatively frequent reported that include membrane reactor , bubbling tower reactor , supercritical reactor , fixed bed reactor and so on. Dube and his partners adopted 0.05 μm multiporous carbon membrane to construct the membrane reactor , found that the multiporous carbon membrane could permeate selectively Fatty acid methyl esters , glycerin and catalyst , so as to separate the products from lipin unconverted , but there are still such problems as difficult separation between catalysts and products , the catalyst can not be reused and the raw materials can not be mixed fully during reaction; the bubbling tower reactor makes the reactants emulsify by the pressuring devices and speeds up reaction velocity , but the reaction also uses homogeneous catalyst , which can not be separated effectively. and catalyst can't be reused; supercritical methanol used to prepare biodiesel didn't need any catalyst , and the reaction can be finished in a short time , but such reactions require high temperature and pressure , the equipment consumes higher energy , so it is difficult to realize the continuing process; the fixed bed reactor can adopt solid catalyst , immobilized-lipase or immobilized-cell as catalyst for continuous production , and has such strong points as simple structure and operation , but the pressure drop in reactor is relatively big , the products are easily sticky to the catalyst which will lead to reduce the activity of catalyst , then influence the normal operation of reactor. Besides , researchers also proposed many neoteric reactors such as micro-channel reactor , oscillatory flow reactor , hydrodynamic cavitation reactor and reaction distillation reactor , which have their own unique characteristics but are all in underway research. ...

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