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## Research on the Production of Fuel Alcohol from the Material of Cellulose

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**ABSTRACT** The fuel ethanol is a main substitute of the clean petrol. According to the characteristics of raw materials, the production method of the fuel alcohol distinguishes molasses, the starch of grain and cellulose. The most challenging subject is using cellulose type materials such as plant straw, timber, etc, in the production of alcohol. Cellulose's pretreatment and highly efficient fermentation technologies are the key problems for producing alcohol from cellulose kinds of material at present. This paper briefly narrated fermentation mechanism, the fermentation process and fermentation way with cellulose. Another purpose of this paper is to offer some references to further industrialization. The paper is concluded by putting forward the author's expectations.

**Key words** fuel alcohol, cellulose, hemi-cellulose, lignin, pretreatment

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### 气泡防伪塑料标签在法国问世

最近,法国蒙托邦一家包装塑胶设备公司发明并生产了一种难以仿造的气泡防伪塑料标签,用于食品、电子产品、纺织品及手表等的外包装。

据介绍,这种气泡防伪塑料标签是直径1~10mm的塑料圆片,在冷却过程中,会随机形成各种气泡图案。由于气泡图案相同的几率极小,且图案和序号都记录在数据库里,消费者购买商品时,只需核查商品塑料标签中的气泡图案是否与数据库里记录的气泡图案一致,就能辨别真伪。此外,这种气泡防伪标签技术还可用在护照及钞票上。