

## 바이오매스를 이용한 술지게미 펠릿의 열적 특성

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### Thermal Characteristics of *Sulgigemi* Pellets Using Biomass

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This paper proposes the method to develop the fuel of *sulgigemi* pellets using agricultural by-products the occurred during the manufacturing of alcohol. This paper is the goal to make *sulgigemi* pellet fuel for develops pellet of high calorific. The methods of *sulgigemi* pellet manufacturing well mix as the dough with the water and the *sulgigemi*. And then we have dried in the after compression and molding using well mixed the *sulgigemi*. The moisture of pellets has dried it removed until about 85%. *Sulgigemi* pellet has the effect of zero emission as the soil conditioner using ash after burning. The merits for the *sulgigemi* pellet are the convenience of storage and custody. Also *sulgigemi* pellet has the reduction effect of carriage fee, fuel economy and low-cost high-efficiency effects, environmentally clean fuel as CO<sub>2</sub> emissions savings. In experiment, we confirmed to calorific of the wood pellet and the *sulgigemi* pellet. The calorific of the *sulgigemi* pellets has high 233 kilo calories than the wood pellets. So the technologies of the *sulgigemi* fuel pellets are developing low carbon, green growth renewable energy fuel through futuristic energy system will be.

**Key words :** *Sulgigemi*(술지게미), biomass(바이오매스), pellet(펠릿), calorific(열량), thermal energy(열 에너지), characteristics(특성)

## 마이크로파에 의한 바이오디젤 합성의 가속화와 에너지 효율성

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### Microwave-enhanced Acceleration and Energy-efficiency of Biodiesel Synthesis

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This presentation shows energy-efficiency of microwave-accelerated esterification of free fatty acid with a heterogeneous catalyst by net microwave power measurement. In the reaction condition of 5wt% sulfated zirconia and 1:20 molar ratio of oil to methanol at 60°C and atmospheric pressure, more than 90% conversion of the esterification was achieved in 20 minutes by microwave heating, while it took about 130 minutes by conventional heating. Electric energy consumption for the microwave heating in this accelerated esterification was only 67% of estimated minimum heat energy demand because of significantly reduced reaction time.

**Key words :** Microwave(초고주파), Biodiesel(바이오디젤), Transesterification(트랜스에스테르화), Esterification(에스테르화), Pulse(펄스)

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