

Biodiesel in a caustic flash

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Biodiesel represents a potentially cleaner and more sustainable fuel than those derived from crude oil. Now, scientists have developed a high-speed conversion that turns waste cooking oil into fuel using ultrasound and caustic soda. Details are reported in the *International Journal of Oil, Gas and Coal Technology*.

Ehsan Khosravi, Ahmad Shariati and Mohammad Reza Khosravi Nikou of the Gas Engineering Department, at the Petroleum University of Technology, in Ahwaz, Iran, explain how economic and environmental concerns regarding petroleum-based fuels has led to increased demand for alternatives. Biodiesel is already used widely in many countries, particularly in public transport. Biomass from plant waste or crops grown specifically for conversion into fuels are two sources, but recycling waste cooking oil, whether vegetable oils or animal fats, offers a potentially sustainable feedstock.

The team has now demonstrated that biodiesel can be quickly produced from waste cooking oil by direct ultrasonic irradiation with [caustic soda](#), sodium hydroxide NaOH or [potassium hydroxide](#) (KOH) as the chemical catalysts for the process known as a transesterification reaction. The researchers point out that adding methanol to the waste oil prior to conversion can boost the efficiency to 99 percent conversion. Moreover, the methanol additive reduces reaction time to just ten seconds. Complete conversion is possible with just 0.75% sodium hydroxide or 1.25% potassium hydroxide if the pellets are ground and blended complete with the waste [oil](#) and methanol raw materials.

More information: Ehsan Khosravi et al. Instant biodiesel production from waste cooking oil under industrial ultrasonic irradiation, *International Journal of Oil, Gas and Coal Technology* (2016). [DOI: 10.1504/IJOGCT.2016.074772](https://doi.org/10.1504/IJOGCT.2016.074772)

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