

# Making biodiesel with green solvents

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Green solvents for making biodiesel would reduce the environmental impact of such fuels still further. Writing in the *World Review of Science, Technology and Sustainable Development*, a team from India discussed the potential of ionic liquids in this field.

Biodiesel is a sustainable alternative to conventional oil-derived [biodiesel](#) in that it can be manufactured from resources such as waste [organic matter](#) from agriculture, the food industry, or even household refuse. It can also be made from crops grown especially for its production. There is, however, a need for volatile organic solvents at various stages of the manufacturing process and these liquids usually come with their own environmental impact. Biodiesel is usually made by trans esterifying [vegetable oil](#) or animal fat feedstock with the help of organic and inorganic solvents.

As such, "greener" alternatives are keenly sought. A. Anitha and D. Jini of the Department of Chemical Engineering at the Hindustan Institute of Technology and Science in Chennai, explain how [ionic liquids](#) might represent such an alternative.

Ionic liquids are non-volatile and non-flammable. They also have low toxicity. This is in sharp contrast with highly volatile, flammable, and toxic organic solvents currently used. Such green credentials have made them a focus for a number of research teams around the world in a wide range of chemical disciplines. Intriguingly, they are nothing more than ionic salts that happen to be liquid at or close to room temperature. However, this character endows them with some unique solvating properties that make them ideal for many applications.

"Energy utilization around the world has been increasing at a steady rate from 1971 and the demand for energy is projected to increase by 55% at the end of 2030. Fossil fuels are not renewable and would be exhausted within 40–60 years even if the rate of consumption remains constant," the team writes. So, not only are alternatives more environmentally friendly they will ultimately be essential to keep up with energy demand. Ionic fluids can support the enzymatic conversion of feedstock to biodiesel as well as being useful in product purification. They can even be the catalyst themselves for carrying out the necessary reactions.

Despite their current high price when compared to organic solvents, they are much more readily reusable, which would reduce environmental impact still further and ultimately costs.

**More information:** A. Anitha et al. Ionic liquids as solvents in biodiesel production, *World Review of Science, Technology and Sustainable Development* (2020). [DOI: 10.1504/WRSTSD.2020.109723](https://doi.org/10.1504/WRSTSD.2020.109723)

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