

Researchers in Russia convert food waste into biofuel

20 November 2017 | News

A team of researchers from Skoltech and the Russian Academy of Sciences Joint Institute for High Temperatures have proposed converting food waste into biofuel via hydrothermal liquefaction, a thermal depolymerization process used to turn wet biomass into oil.



The researchers theorized that hydrothermal liquefaction presented a uniquely energy-efficient and universal option.

A team of researchers from Skoltech and the Russian Academy of Sciences Joint Institute for High Temperatures have proposed converting food waste into biofuel via hydrothermal liquefaction, a thermal depolymerization process used to turn wet biomass into oil.

The researchers theorized that hydrothermal liquefaction presented a uniquely energy-efficient and universal option. In particular, this method makes it possible to produce biofuel directly from wet biomass. Notably, it is best to convert the wet biomass before it dries, as the drying process consumes a considerable amount of energy.

To test their theory, the research team experimented with various types of food waste, including parmesan cheese, ham and apples. They then analyzed the molecular composition of the biofuel produced with an ultra-high resolution mass spectrometer.

The team found out that after undergoing the process of hydrothermal liquefaction, meat and cheese converted into a water-soluble fraction and a water-insoluble oil. Apples only converted into a water-soluble fraction. The molecular composition of the biofuel produced from the meat and cheese was very diverse and was more like tar than oil,

Knowledge of the molecular composition of products obtained as a result of hydrothermal liquefaction will allow scientists to develop the most optimal methods for their subsequent processing to produce fuel suitable for powering cars.