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Renewable diesel production by hydroconversion of waste cooking oil

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Catalytic hydroconversion of lipid containing feedstocks is envisioned as a successful technology route for the production of renewable fuels, including renewable kerosene, gasoline and diesel. A new technology based on catalytic hydrotreating Waste Cooking Oil (WCO) for biodiesel production has been developed in the Center for Research and Technology Hellas (CERTH). The main premise of this process is the conversion of the WCO fatty acids into normal- and iso-paraffins. The technology was evaluated in pilot-plant hydroprocessing units of CERTH where feedstock origin as well as optimal catalysts and operating parameters where identified. The resulting total liquid product mainly consists of molecules within the diesel boiling point range. The fractionated diesel product, called "white" diesel exhibits excellent fuel properties including higher heating value (over 49MJ/kg), negligible acidity, higher oxidation stability and higher cetane number (~77) than conventional biodiesel. The overall product yield is ~92% v/v. Besides the advanced properties of the produced diesel, this new suggested technology is extremely appealing as it employs existing refinery infrastructure and expertise, offers feedstock flexibility, leaves no byproduct and above all is economically attractive. The technology was demonstrated for the production of 2 tons of the new white diesel and its application in a local garbage truck.

Biography

Sofia Carnevali has completed his PhD at the age of 29 years from the University of Complegne in chemical and energetic engineering. She is a PhD research engineer in thermo hydraulics at the CEA, Paris, France. She has won two awards for her research results from the nuclear SFEN society and from the Chemical EFCE organisation. She has published 1 paper in Chemical Engineer Journal and she is waiting for 2 others papers in Nuclear and Design Journal.

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