

Analysis of Oil – Biodiesel Samples by HPLC using the Normal Phase Column of New Generation and the Evaporative Light Scattering Detector.

S.N. Fedosov, N.A. Fernandes, M.Y. Firdaus, Aarhus University
Aarhus, Denmark

Conversion of vegetable oil to biodiesel is usually monitored by gas chromatography, which requires an elaborate derivatization of the samples. HPLC methods are apparently more convenient, but none of the described variants had won a wide recognition so far. Here we report an HPLC procedure suitable for separation of biodiesel, free fatty acids, tri-, di- and monoglycerides. The normal phase column of new generation (Poroshell 120 HILIC) and the novel gradient were used, see Figure. The method was tested on both the artificial mixtures and the crude reaction samples. Elution of the analytes was monitored on an evaporative light scattering detector. This method is usually confined to a very limited range of masses, because of a complex shape of the calibration curves. We have analyzed the light scattering signal within a very broad range of masses, whereupon the data were approximated by the appropriate equations. An experimental conversion of rapeseed oil to biodiesel was performed by a liquid lipase formulation, and this process was monitored by HPLC to illustrate advantages of the suggested registration method.

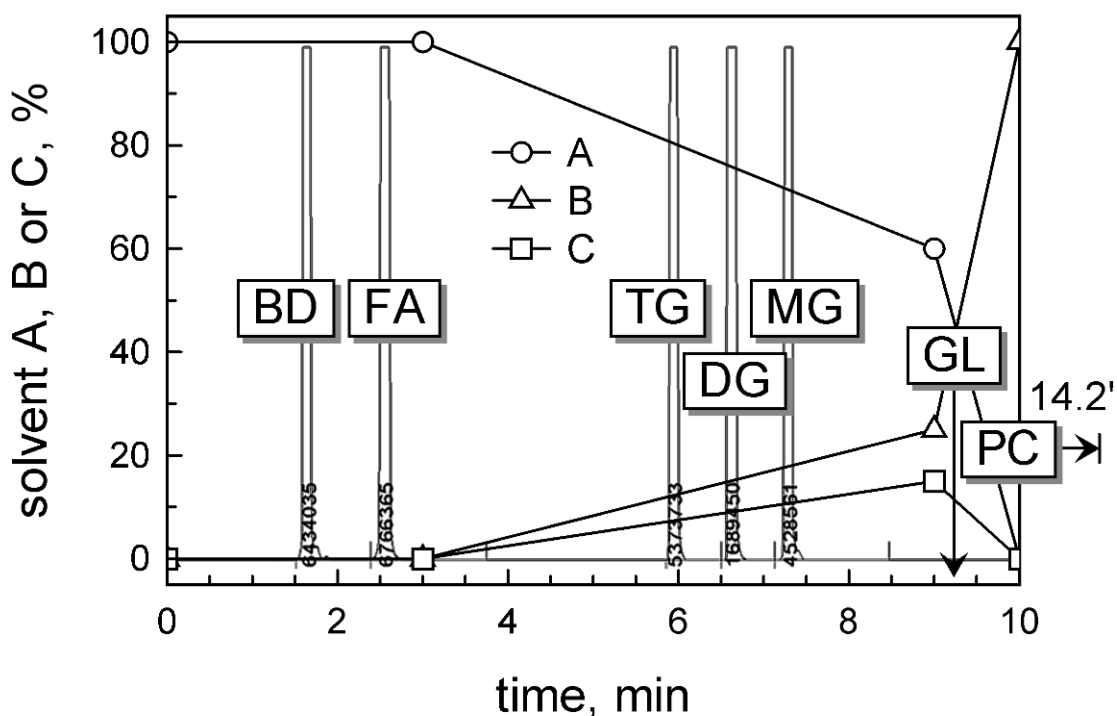


Figure. Separation of a crude mixture of BD – biodiesel, FA – free fatty acids, TG –

triglycerides, DG – diglycerides, MG – monoglycerides, GL – glycerol, PC – phosph. choline.