

BIOFUELS.

LITERATURE:

1. R. T. Morrison, R. N. Boyd: Chemia organiczna, tom 2 (rozdz. 33: Tłuszcze) PWN, Warszawa 1985. (in Polish) or R. T. Morrison, R. N. Boyd: Organic Chemistry, vol. 2.(in English).
2. S. Bredsznajder, W. Kawecki, J. Leyko, R. Marcinkowski: Podstawy ogólne technologii chemicznej, PWN Warszawa 1973. (in Polish)
3. S. E. Manahan: Environmental Chemistry, Brooks/ Cole Publishing Company, 1984.
4. H. Koneczny: Podstawy technologii chemicznej, (rozdz. V: Paliwa i ich przerób), PWN, Warszawa 1973. (in Polish)
5. R. Bogoczek, E. Kociołek-Balawejder: Technologia chemiczna organiczna, rozdz. 2, WAE, Wrocław 1992. (in Polish)
6. Spalanie i paliwa praca zbiorowa pod red. J. Kordylewskiego, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2005. (in Polish)
7. J. Ciborowski: Inżynieria chemiczna. Inżynieria procesowa, WNT, 1973. (in Polish)

ATTENTION: Student are obliged to search information on the presented subjects from additional sources (physical chemistry and thermochemistry textbooks from the library, internet sources etc.)

Requirements

1. Definitions: fuels, biofuels (bioethanol, biodiesel), heat / thermal capacity, fats and vegetable oils, fatty acids and their esters, triglycerides (triacylglycerols), FAME (fatty acid methyl esters), physical and chemical properties of fats.
2. Combustible materials (flammable substances). Fuels – definition and classification. Combustion processes, chain reactions, heat of combustion and calorific value , explosions, explosion limit, sparkignition engine, compression-ignition engine (Diesel engine, diesel). Cetane Number, Octane Number.
3. Chemical equations of FAME synthesis from triacylglycerols and mechanism of this reaction.
4. Knowledge on the procedures of synthesis, purification and analysis of biofuels described in the instruction.