

## DETERMINATION OF HEAT OF COMBUSTION OF 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: energy and conversion of energy, heat / thermal capacity, calorimetric constant.
2. Combustible materials (flammable substances). Fuels – definition and classification. Combustion processes, chain reactions, heat of combustion and calorific value , explosions, explosion limit, sparkignition engine.
3. Basic concepts and definitions of thermodynamics and thermochemistry: functions of state, thermodynamic functions, heat, work, laws of thermodynamic and thermochemistry (Hess's law, Kirchoff's law).
3. Heat transfer and mechanisms of heat exchange (heat conduction, convection, thermal radiation).
4. Calorimeters: definition, design, the calorimeter constant (heat capacity of calorimeter), typical calorimetric plot of temperature versus time.