

Thermochemistry of organophosphorous compounds: solution and combustion calorimetry

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The importance of getting data on thermochemical properties of organophosphorous compounds is determined by their prevalence in the world from the biological processes as glycolysis up to industrial chemistry and utilization of pesticides. However, up to the current moment there is lack of information about enthalpies of formation of these substances and also there is no clearness for the procedure of making combustion calorimetry experiments with organophosphorous compounds due to complications of the combustion process for them.

In our work we attempted to uniform the procedure of combustion calorimetry for organophosphorous compounds and made combustion calorimetry experiments with phosphites, phosphine oxides and phosphines to get the enthalpy of formation data. In addition, we performed solution calorimetry and transpiration measurements to obtain thermodynamic data on volatility and solubility of these compounds because this information can be supportive for understanding many biological processes taking place in the nature.