

Calorimeter

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Calorimeter A calorimeter widely used in the calorimetry. It is used for measuring the heat of chemical reactions and heat capacity. Calorimeters identify the scale and rate of production of heat and change into numerical designations that can be used to sufficiently measure the assimilation and production and energy and heat. There are different types of calorimeter including titration calorimeter, accelerated rate calorimeter, differential scanning calorimeter and isothermal microcalorimeter (Kraftmakher, 91). A calorimeter is made up of a thermometer attached to a metal container filled with water suspended above a combustion chamber. It has a wide range of applicability. For instance, it is used in drug design in pharmaceutical companies, study of metabolic rates in biological systems and quality control process in chemical industries. Besides, it can be and expensive and sophisticated or cheap and simple.

A calorimeter can be operated under constant volume or constant pressure. There is need to establish the heat capacity of the calorimeter. Heat capacity can be defined as the quantity of heat needed to raise the temperature of the whole calorimeter by 1K. Heat capacity is generally determined experimentally before and after the definite measurements of heat of reaction. It is determined by shifting a known quantity of heat into it and noting its temperature increase. Because the temperature differences are minute, very sensitive thermometers are necessary for these experiments. The theory of calorimetry is fundamentally used in academic teaching. It is useful in finding the enthalpy change per mole of substance in X in a chemical reaction between two chemicals X and Y. the two substances are placed in a calorimeter and the final and initial temperatures are noted. Multiplication of the change in temperature by mass and the specific heat

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capacities of the substances in the reaction give the value of energy that is engrossed or given out during the reaction. The method is called the theory of calometry (Kraftmakher, 78).

Work Cited

Kraftmakher, Yaakov. Modulation Calorimetry: Theory and Applications ; with 27 Tables.

Berlin [u. a.: Springer, 2004. Print.