Instrumental Improvement for Calorimetric Research

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A new device for bringing reagents into liquid has been designed. The device is chiefly intended for experimental thermochemistry, particularly for calorimetry, and can be used to obtain the thermochemical data required for solving numerous theoretical and applied chemistry problems. The original design of the device allowed all parts of the tank housing the reagent to be manufactured exclusively from the inert material polytetrafluoroethylene (PTFE or teflon). Hence follows its versatility, as it may be used for experimentation with any mixed corrosive substances. The developed device meets absolutely all requirements for the most precise calorimetric experiments of today. In the new device, the reagent is thermostatted inside the calorimetric liquid without contacting either the liquid or the ambient atmosphere until the moment of introduction into the liquid medium. At the same time, the above device, compared to the best available ones including the most widely used and most efficient conventional facilities employing sealed air-tight glass or quartz ampules, has significant advantages. The design of the device allows the reagent sample to be placed and sealed in any required atmosphere under control, which makes it possible to avoid any undesirable effect on the substance. Therefore, the device can be used to introduce any reagents (e.g. substances which absorb moisture or are hydrolyzable in air, etc.). The reagent sample can easily be put into the device and sealed in a box using mechanical arms, which facilitates handling poisonous or radioactive substances. The device is compact, simple in design, manufacture, and use, and has a long service life.