



FIGURE 1. Schematic representation of an isothermal titration calorimeter. Reference and sample cells are located within a thermal insulator, shielding them from temperature changes in the environment. Constant cooling by the outer shell of the apparatus, together with precisely regulated electrical heating of the cells, ensures a constant temperature in each of the cells (these devices are not shown in the scheme). A very small temperature difference (10^{-3} degrees) is established between the two cells, allowing the exact measurement of minute changes in temperature by a thermocouple (TC). Changes of heat due to the chemical reaction in the sample cell, which are detected by a small change in the temperature difference between the two cells, are counteracted exactly by a change in the heating of the sample cell that is controlled by an extra heating coil (as shown in the figure). Thus, the heating power, integrated over time after each injection, corresponds to the Δq_i value generated by the reaction in the cell. The injection syringe can be rotated and used to stir the sample solution to provide fast mixing after each step of injection.

Protein-Protein Interactions: A Molecular Cloning Manual, 2nd Ed., © 2005 by Cold Spring Harbor Laboratory Press, Chapter 13, Figure 1.