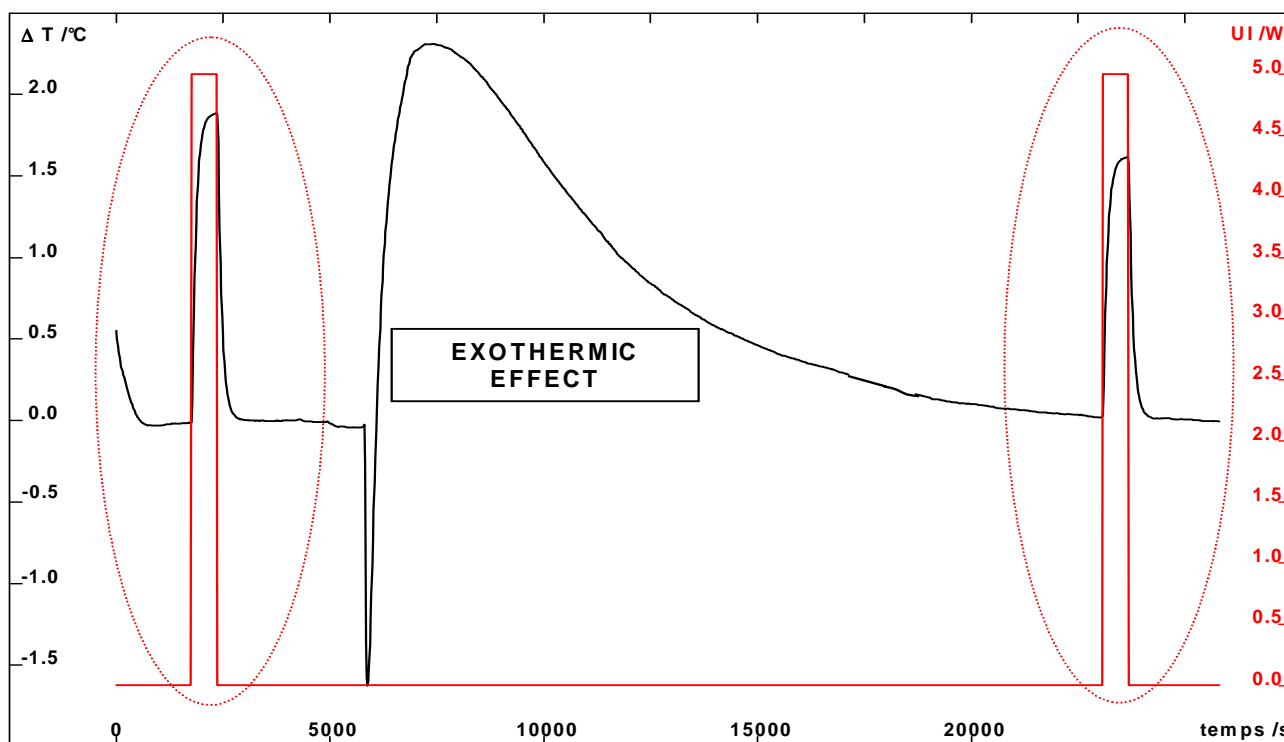


Calibration by Joule Effect



Experimental

Calibration before reaction :

A power P (5 Watts) is produced during a selected time t (900 s in this example) by means of a resistance merged in the measuring reactor (red curve).

The difference of temperature is measured (black curve) between the measuring and the reference reactors. The two kind of peaks observed (red and black curves) are integrated. Their ratio provides the value of UA_1

$$UA_1 = \frac{2989.0 \text{ J}}{1142.5 \text{ } ^\circ\text{C}\cdot\text{s}} = 2.6 \text{ W}/^\circ\text{C}$$

Calibration after reaction :

The same procedure is applied after the reaction.

UA_2 is calculated :

Notice: UA before reaction is lower than after reaction because the level inside the reactor increased.

$$UA_2 = \frac{2989.0 \text{ J}}{960.2 \text{ } ^\circ\text{C}\cdot\text{s}} = 3.1 \text{ W}/^\circ\text{C}$$

The average value of UA between before and after reaction is $UA = \frac{2.6 + 3.1}{2} = 2.85 \text{ W}/^\circ\text{C}$

Instrument :

DRC (- 80, + 150°C)



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