J Therm Anal Calorim (2013) 114:457
DOI 10.1007/s10973-011-1915-9

Addendum to "A simple kinetic method for the determination of the reaction model from non-isothermal experiments"

Roger Blaine · Jordi Farjas

Received: 1 September 2011 / Accepted: 5 September 2011 / Published online: 18 September 2011

To the Editor,

In 2010, J. Farjas, N. Butchosa, and P. Poura at the University of Girona published an article in the *Journal of Thermal Analysis and Calorimetry* titled "A simple kinetic method for the determination of the reaction model from non-isothermal experiments" [1]. The article describes an approach to determining reaction order from the shape of the reaction exothermic peak using the time at full-width-at-half-maximum (Δt_{FWHM}) as the metric. Equation 24 of that publication relates the value of the parameter $\Delta t'_{\mathrm{FWHM}}$ to reaction order nor for *n*th order reactions, through third-order polynomials in *n*. Because the purpose of the article is to obtain *n* from $\Delta t'_{\mathrm{FWHM}}$ a relationship where $\Delta t'_{\mathrm{FWHM}}$ is the independent variable would be more useful to users. In correspondence, Dr. Farjas has re-examined the data and offers the following relationship for this purpose.

$$n = -0.39374 + 0.36063\Delta t'_{\mathrm{FWHM}} + 0.08934{\Delta t'_{\mathrm{FWHM}}}^{2}$$

The difference between the exact and approximate values of *n* in this equation is below 0.04 for $0.11 < n < 3.96$ covering the complete practical range for *n*.

$\Delta t'_{\mathrm{FWHM}}$ can be determined from the value of time's half width at half maximum at infinite heating rate, $\Delta t'_{\mathrm{FWHM}}/A$, where *A* is the pre-exponential term of the rate constant. Both *A* and $\Delta t'_{\mathrm{FWHM}}/A$ can be obtained from the *y*-intercept of the Kissinger and $\ln(\Delta t_{\mathrm{FWHM}})$ versus the reciprocal of peak temperature plots, respectively.

Readers of the original article may well wish to add this relationship to the original article as a useful expansion.

Reference

1. Farjas J, Butchosa N, Roura P. A simple kinetic method for the determination of reaction model from non-isothermal experiments. J Therm Anal Calorim. 2010;102:615–25.

R. Blaine (✉)
TA Instruments (Retired), 5516 SW Willow Avenue, Corvallis, OR 97333, USA
e-mail: roger.l.blaine@gmail.com

J. Farjas
University of Girona, Campus Montilivi, Edif. PII, 17071 Girona, Catalonia, Spain
e-mail: jordi.farjas@udg.cat