Note

REMARKS ON "TRANSFORMATION OF DYNAMIC DSC CURVES FOR THERMOSETTING POLYMERS IN CURING KINETIC ANALYSIS"

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In paper [1], Khabenko and Dolmatov asserted that " ...there are no papers where the kinetic parameters derived from the dynamic DSC data for the curing of thermosetting polymers are then used to predict the course of the reaction in the isothermal mode". We cannot agree with this statement. We recently suggested [2] a method for the transformation of non-isothermal kinetic curves into an appropriate isothermal form. Our method is based on the following equation:

$$t_w = \int_0^{T_w} \exp(-E/RT)\, dT / (q\, \exp(-E/RT_{iso})) \tag{1}$$

The value of t_w obtained by means of Eq. (1) for the isothermal kinetic curve at a given temperature T_{iso} corresponds to the transformation degree w complying with the temperature T_w in the non-isothermal kinetic curve at the heating rate q. To calculate E for Eq. (1), the methods employing a set of nonisothermal runs were recommended [2], and isoconversional ones were among them. Thus, Eq. (1) is fully acceptable for both complex $(E = E(w))$ [3] and simple $(E \neq E(w))$ processes. As a result, our method is suitable for

various types of investigated processes and the curing of thermosetting polymers is not an exception.

References

1 A. V. Khabenko and S. A. Dolmatov, J. Thermal Anal., 36 (1990) 45.
2 S. V. Vyazovkin and A. I. Lesnikovich, Zhurn. Fiz. Khimii (Russian J. Phys. Chem.), 62 (1988) 2949.
3 S. V. Vyazovkin and A. I. Lesnikovich, Thermochim. Acta, 165 (1990) 273.