

Improved Method to Extract Kinetic Parameters from Thermograms

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Abstract

Thermogravimetric (TG) analysis and differential thermogravimetric analysis (DTG) are the most commonly used analytical techniques to find the kinetic triplet of solid state reactions. There are number of methods proposed in the literature for extracting kinetic parameters of solid state reactions from TG & DTG thermograms. MATLAB based computer simulation was used to investigate the dependence of DTG peak position on kinetic triplets. The numerical modelling shows that there is no significant variation in DTG peak position with the reaction model. Therefore, peak position is not a suitable parameter when determining reaction model. However, this enables a development of a common equation to link the activation energy and the pre-exponential factor. This relationship in turn be used to enhance the accuracy of kinetic parameters obtained.