UDС 544.525.7

THERMOMETRIC STUDIES OF PHOTOPOLYMERIZABLE MATERIALS PHOTOSENSITIVITY

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**Research methodology.** The article is devoted to kinetic study of photoinitiated radical polymerization of solid photopolymerizable materials (PPM). Light-sensitivity determination may be assigned by different principles, for example, densitometry, gravimetry, calorimetry. The paper proposes a method of the quasi-isothermal determining of thermal effect of PPM radical photopolymerization. Thermometric curves obtained under experimental conditions are adequate kinetic curves, which allows to determine the light-sensitivity of PPM.

**Results.** All obtained kinetic curves are of the same type. Polymerization consists of two unequally great periods: rapid stage from the beginning of the polymerization (lasting 10–40 % of the process time) and relatively slow second stage, which lasts for the rest of the time. On the kinetic curves it can mark a number of extreme points which determine the light-sensitivity of the PPM.

In the article the light-sensitivity of a number of applicable printing materials has been established. Comparison of the results of light-sensitivity determination by known gravimetric (gel fraction) method and the proposed thermometric method indicates a good correlation between them (correlation coefficient is 0,992–0,997), which proves the correctness of the use the proposed method.

**Novelty.** Thermometric method of determining of the photopolymerizable materials sensitivity is first proposed.

**The practical significance.** The proposed method can be applied to study the kinetics of the processes of photoinitiated radical polymerization of solid and liquid PPM. Application of this method tenfold reduces the duration of the researches.