

Review of: "Analysis method of binary concentration-inhomogeneous systems"

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Potential competing interests: No potential competing interests to declare.

Review of the Alexander Levinsky's paper "Analysis method of binary concentration-inhomogeneous systems"

The paper is dedicated to the analysis of inhomogeneous system that contains a mixture of monomers and polymerized methyl methacrylate (MMA). This type of system can be created as the process of polymerization is auto accelerated. The author proposed an approach for finding of mass distribution function by using any property of inhomogeneous system, such as, specific heat capacity density etc. To analyze mass distribution function of an inhomogeneous system, the author considered known the glass transition temperature as independent variable. The specific heat capacity is considered to be a dependent variable. The author provided some qualitative example in order to explain his approach. An important proposal in the study is the assumption of the property additiveness for heat capacity of the each fraction, in order to be obtained the whole system heat capacity. This way, there was formed Fredholm integral equation, based on which the author claims that there is possible to be calculated the PMMA/MMMA inhomogeneous mass distribution function. Based on my review I have the following comments and questions to the author:

1. Figure 1, is providing the total heat capacity dependence on glass transition temperature. However, it is not convincing because there are no numbers on the axes and therefore it cannot be verified independently. If the statements in figure are true, the author easily can provide data for particular concentrations.
2. Equation 1 stated additiveness of heat capacity. I would agree that it is true for homogeneous system but how has been proven by the author that it is also true for inhomogeneous system and there is no mixing term.
3. On my opinion, the lack of experimental data in the paper and their comparison with calculations, is the major weakness of the content
4. It seems that the whole paper is based on PHD thesis: Левинский А.И. "Формирование концентрационной неоднородности при радикальной полимеризации метилметакрилата в массе на стадии автоускорения", 1987. I tried to find the original document online but unfortunately that was not possible. Please to add in literature the original Russian title of the dissertation, because the English translation is somehow misleading.

On my opinion the presented paper should be qualified more as a technical note rather than to be a research article.