May 15, 2018

Dear Editor,

Please find our Manuscript entitled: **“IMAGE ANALYSIS AS A USEFUL TOOL FOR FAST DETECTION OF DIMENSIONAL AND STRUCTURAL CHANGES OF POLY(ETHYLENE TEREPHTHALATE) CONTAINERS”**, by N. Jevremović, S. Veličković, M. Kalagasidis Krušić, V. Panić, T. Volkov-Husović, R. Jančić Heinemann and I. Popović, which we would like to be considered for publication in "Hemijska Industrija".

 Our paper presents the use of image analysis in the fast detection of dimensional and structural changes in transparent PET containers that occurred during the storage stability test. Structural changes detected by image analysis were confirmed by DSC analysis.

To best of our knowledge there is no data regarding the use of image analysis in the monitoring of structural changes of polymers. We found the linear correlation between the change in the degree of crystallinity (obtained by DSC) and the change in transparency of PET (obtained by image analysis). Furthermore, this correlation was found to be independent of the solvent involved to induce the transparency change. The master curve obtained once for the production line can be used to test huge number of the samples of the same type. This means that the time consuming and costly DSC measurements should be used only to obtain the master curve (which requires testing of few samples, only) and not to test the entire production line (that would be further done only by the image analysis). In addition, the obtained results were analyzed with one-step analysis of variance (ANOVA) combined with Duncan’s statistical test (p<0.05) to identify the significant parameters. As a final point, it is applicable for other polymers.

Since this is the first time that image analysis has been used not only to monitor the dimensional changes of a polymeric material, but also the structural changes, and that the obtained results were noteworthy and original, the investigation presented in this manuscript is of current interest. Thus, we believe it would be attractive for the wider scientific as well as engineering readership and suitable for consideration by the “Hemijska industrija”.

Kind regards,

Dr. Melina Kalagasidis Krušić

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