

Review of the Thesis for State Doctoral Exam

**“CROSS-LINKING, MORPHOLOGY AND PROPERTIES
IN POLYMER BLENDS AND COMPOSITES”**

by Yasin Hamid

**Faculty of Technology
Tomas Bata University in Zlín**

Reviewer: Petr Filip
Institute of Hydrodynamics, Czech Academy of Sciences, Prague, Czech Republic

Orientation in the presented thesis is rather difficult as for instance in 1-page introductory abstract the author introduces in one paragraph: "The purpose of this study was to investigate the effect of carbon fibre ... on ... of Ethylene Butene Copolymer (EBC)." and after a couple of lines in the following paragraph: "The effects of different carbon black content on Ethylene-butene copolymer (EBC)...". Hence, one has no idea which morphology was used. It seems to be in a contradiction but in fact both types are studied. However, it is not said plain enough and one has to elucidate it by reading the whole thesis.

After reading the whole thesis it is possible to obtain an idea about author's aims. However, the goals are not addressed sufficiently clear and plain, it is difficult to be oriented why the individual subtopics appear in the presented thesis, and why in the chosen sequence. Usage of some terms is also questionable just from the very beginning as in the Abstract the term mechanical viscosity.

The principal point that I am rather bewildered is probably caused by missing a conceptual preparation preceding the elaboration of the Ph.D. thesis itself.

First, it is necessary to realize the possibilities of the experimental measurements, their accurateness, and ongoing possibilities of potential theoretical modelling. The discrepancy between these two approaches is apparent for instance in Table 8, where the fitting parameters are introduced with accuracy of six decimal figures.

Second, it is evident that theoretical modelling if we have just three experimental points is really impossible. For a description of these three points we can use any conic sections or any other curves. But this situation should have been realized just before planning the experiments. Hence, the impact of irradiation on quality of processed materials cannot be

quantified. And because there were declared two inputs in the thesis: adding carbon fibres (black) and irradiation, evaluation of one half is rather reduced. And one more comment: Is there any connection between the broken lines in Figures presenting irradiation (three points) and the corresponding modelling containing parameters with six valid ciphers?

Third, I was surprised by appearing the section discussing the Kelvin-Voigt and Maxwell models as they have absolutely no relation to the presented thesis and their introduction is probably more than difficult to substantiate.

These points were only three examples that structuring of the thesis is not well organised. On the other hand it is apparent that there were carried out a series of measurements which have the clear meaning and contribute to better understanding of the whole process.

Taking into account both positive and negative entries I do not find the thesis as presented suitable for defending Ph.D. title as the thesis does not fulfil the required parameters.

Conclusion: not recommended

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Petr Filip

Institute of Hydrodynamics
Czech Acad. Sci.
Pod Patankou 5
166 12 Praha 6