Thesis Changes Log

Name of Candidate: Mohammad Owais

PhD Program: Materials Science and Engineering

Title of Thesis: Material design and optimization of thermal management materials based on boron nitride, graphene, and carbon nanotubes polymer nanocomposites

Supervisor: Dr. Sergey Abaimov, Skoltech

The thesis document includes the following changes in answer to the external review process.

From Dr. Igor Shishkovsky:

Q1: Please re-check the numbering of the figures in the text of the dissertation. For example, Figure 1 occurs twice.

Answer. The numbers of the figures are corrected in chapter 2 in the text of the dissertation.

Q2: In paragraph 3.46, the diffraction peaks are mentioned as (002), (100), and (004), but there is a need for further clarification and specification. In the provided Appendix 1, the author has included explanations; however, it would be beneficial to associate each diffraction peak with specific materials. As different modifications of the BN phase are recognized, providing separate diffractograms for PVA and BN would help elucidate the situation and enhance clarity. Main my question was - Why did the (101) peak corresponded to the polymer disappear? What is happen with polymer after mixture preparation? You have a polymer matrix and its presence should be obvious!

Answer. The graph is plotted again with discussion as you have enumerated in your question and is inserted in the updated thesis. Please see section 3.4.6.

From Alexander M. Korsunsky:

Q1: I feel that a crucial part of the work is establishing the dependence of key parameter (thermal conductivity) on the weight percentage of loading. This is probably the most important and most physically significant part of the work, yet I could not see any attempt to quantify the relationship, nor even a discussion of the underlying principles and literature reports. Both discussion and literature review *of this specific aspect* and of the candidate's findings in this field should be added.

Answer. A new section related to the literature relationship of the loading concentration of filler with thermal conductivity and percolation threshold behaviour is added in the thesis. Please see section 2.2.5 and 4.4.2.4.