

Review Report for dissertation work:

Viscoelastic Response of Magnetorheological Suspensions

Student Name: M.Sc. Andrei Munteanu

Program: Ph.D. Degree Course (3942V066)

Institution: Tomas Bata University in Zlin, Centre of Polymer Systems

Supervisor: Prof. Ing. Michal Sedláčik, Ph.D.

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Reviewer: Prof. Ing. Petr Slobodian, Ph.D.

Report Date: November 22, 2024

The submitted thesis *Viscoelastic Response of Magnetorheological Suspensions* by M.Sc. student Andrei Munteanu is conceived as a collection of already published **four** scientific articles. The thesis contains an appropriate introduction to the studied issue dealing with the viscoelastic behaviour of magnetorheological suspensions and elastomers viscoelastic behaviour of magnetorheological fluids (MRF) and elastomers (MRE) as smart materials that exhibit unique properties when exposed to external stimuli. The published papers are of high quality scientific achievement published in very prestigious international journals. Moreover, these are only selected publications, because according to the information from the dissertation, there are **nine** finished papers where M.Sc. Andrei Munteanu participated.

The student has fulfilled required study obligations.

I evaluate the submitted thesis as sufficient evidence for the final defence. I propose a work for acceptance and the possibility of defending it before an examination committee and achieving Ph.D. degree.

Can you please answer following questions?

1. Could you briefly introduce us to the used applications of MRF and MRE. Where are they actually used, with what parameters, what are their advantages and disadvantages. Are there any new applications that cannot be realized without using MRF and MRE? Summarize which disadvantages of using MRF and MRE your work tries to dissolve?
2. Can you describe main benefits in course of MRF and MRE recycling?

3. Paper 4. There are some SEM available of nickel particles covered with polypyrrole particles, as individual Ni-PPy particles? How big are the dispersed Ni-PPy particles themselves?

Prof. Ing. Petr Slobodian, Ph.D.

In Zlín 22. 11. 2024