

Review
of the Ph.D. Thesis of Andrei Munteanu
entitled:
Viscoelastic Response of Magnetorheological Suspensions

Doctoral Thesis deals with investigation of magnetorheological fluids (MRF) and magnetorheological elastomers (MRE). Development of conductive and magnetic composite particles based on polypyrrole, magnetite nanoparticles, nickel and carbonyl iron microparticles was performed and MRF in silicone or mineral oils were prepared. Carbonyl iron microparticles were incorporated into thermoplastic polyurethane and MRE with piezoelectric properties were studied. Possible application of such systems lays in areas where reversible change of internal structure caused by external magnetic field brings benefits.

Among aims of this Thesis belong synthesis of polypyrrole particles with various shape and composition used as dispersed phase in MRFs and preparation of MREs with thermoplastic matrix suitable for later recycling.

Thesis was submitted as a collection of four papers with very brief introduction (10 pages) into the field of magnetorheology and magnetorheological materials. Relevant results from papers are included together with summary of research work contribution to science and practice. For this part of thesis author used 52 citations.

All of papers were already published within last three years in scientific journals with impact factor ranging from 3.1 to 4.4. According to database Web of Science those journals belong to Q1 up Q3 quartile in their professional areas and ca 15 citations was registered until now. In two of papers Mr. Munteanu is first author.

Obtained data were already reviewed by relevant experts in paper submissions/acceptation process for publishing them in scientific journals. It means that they were found as sufficiently new and important bringing new original results. It is important for student during his Ph.D. Thesis defence clearly present his personal contribution to those papers.

However, I have some comment to the title of Thesis which according to my opinion does not very reflect topics of selected papers.

Questions for discussion:

1. Which of your results you regard as the most important?
2. Based on your literature survey, what is the fresh practical application of MRF or MRE?
3. What research direction you would like to continue (besides those mentioned in Thesis) or you would recommend to your followers?

The comments and questions introduced above do not diminish the quality of scientific level of Andrei Munteanu and his contribution to the field of Nanotechnology and Advanced Materials. I recommend accepting this Thesis and after successful defence to award Andrei Munteanu with Philosophiae Doctor (Ph.D.) degree.

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Assoc. Prof. Vladimír Pavlínek