

Supervisor evaluation of Ing. Tomáš Barbořík and his Ph.D. thesis

Student evaluation: Tomáš Barbořík began his Ph.D. study in September 2013 at Polymer Centre, Faculty of Technology, Tomas Bata University in Zlín. During his Ph.D. study, he was participating on 2 Grant Agency of the Czech Republic projects, namely GA16-05886S (Title: Investigation the effect of polymer melt shear and elongational rheology on production stability of meltblown nanofibers and films; Role: research team member) and GAP108/10/1325 (Title: Applied rheology for advanced polymer processing; Role: research team member) as well as on 2 internal UTB projects (*IGA/FT/2016/007* and *IGA/FT/2015/013* in the leader role). He was working highly independently, creatively, actively and precisely. He learned tensor calculus together with C++ programming language, which were needed for development and solving of physical models (related to processing of viscoelastic polymer melts via cast film technology) by using suitable numerical schemes. During his Ph.D. study, he spent 8 months at Department of Chemical Engineering, Faculty of Engineering, University of Waterloo, Ontario, Canada, at the Prof. Costas Tzoganakis research group investigating film casting process instabilities in more detail. He was also one of the key organization team member for three international conferences (Novel Trends in Rheology V-VII) organized in 2013, 2015 and 2017 by FT UTB in Zlín. During his study, he published two research papers in the following impact factor research journals:

- *Journal of Non-Newtonian Fluid Mechanics* (AIS₂₀₁₇ = 0.769, IF₂₀₁₇=2.293)
- *International Journal of Heat and Mass Transfer* (AIS₂₀₁₇ = 0.767, IF₂₀₁₇=3.891)

Tomáš Barbořík has also showed ability to successfully present and defense his scientific work at different conferences before number of international and national experts. Till this date (December 4, 2018), the number of Tomáš Barbořík's publication records in the Scopus database is 6 (Author ID: 57190936025).

It can be stated that Tomáš Barbořík has demonstrated high independency, creativity and sufficient knowledge fulfilling the studied 'Chemistry and Materials Technology' Ph.D. study program.

Evaluation of Tomáš Barbořík's Ph.D. thesis entitled as 'Viscoelastic Modeling of Extrusion Film Casting for Polymer Melts: Investigation of Flow Stability': The Ph.D. thesis is focused on development and validation of non-isothermal and fully viscoelastic 1.5D model for extrusion film casting process technology considering temperature as well as flow induced crystallization in order to clarify the role of processing conditions, material parameters, die design and flow stability. Developed model together with obtained knowledge can directly be used to optimize production of very special polymeric films such as for example separators for batteries or optical membranes used in liquid crystal displays. The Ph.D. thesis consists of two already published papers in prestigious *Journal of Non-Newtonian Fluid Mechanics* and *International Journal of Heat and Mass Transfer* and two manuscripts considered for the publication. This demonstrates high quality, novelty and originality of the research, which has been done by the Tomáš Barbořík in the studied research filed.

Plagiarism check: The Ph.D. thesis was verified by the plagiarism control and it is not a plagiarism.

Therefore, it is my pleasure to fully recommend Tomáš Barbořík and his Ph.D. thesis for the defense.

In Zlín, 4.12. 2018



prof. Ing. Martin Zatloukal, Ph.D., DSc.