

OPONENTNÍ POSUDEK

dizertační práce Davita Bleyana

„Binder Systems for Powder Injection Moulding“

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In a well-understandable manner, the thesis submitted deals with a topic that has been growing in importance within a few decades since 80's till now. In PIM, it monitors the components essential for the system processability, i.e. binders. Choosing of a proper binder affects rheological and mechanical parameters of the final compound significantly.

The thesis is segmented into five well understandable papers with a detailed information contained. Better understanding of the interaction between separate binder system components, as well as a deeper knowledge of a separation of the powder and binder components, is still missing in the literature. Understanding the role of particular binder components allowing to precisely balance the binder system composition with novel feedstocks featuring advanced processing parameters, is crucial for a further development and industrial utilization of these systems.

The thesis quality is very good, and the results are presented in a convincing manner. Let me just have a few remarks / comments / questions I would like the author to deal with during / after his presentation:

- Please explain more into a detail the binder system selection. Could you describe why these grades have been chosen, and what are their rheological parameters enabling them for the PIM system you decided for?
- To what extent (by your opinion) can the natural waxes replace the standardly used polymers in a practice, not just on the laboratory level? What are the price issues/impacts?
- Would these systems (after modifying rheological parameters) be also suitable for extrusion purposes? How much can the parameters such as shrinkage, cooling lengths be influenced?
- By your experience gained within the work on the thesis, would you recommend carnauba wax as a replacement of stearic acid in surfactant applications generally, or do you see any limitations restricted just to the PIM technology?

The quality of thesis is very good so let me recommend the committee members the “passed” statement.



With best regards
Vladimír Pelíšek