

Supervisor's opinion on the PhD. thesis

"Improving the mechanical performance of multicomponent injection moulded products"

written by

Ashish Matta submitted to the
Tomas Bata University in Zlin

Ashish Matta, M.Sc., undertook a doctoral programme in the field of 'Technology of Macromolecular Compounds' at the Faculty of Technology, Tomas Bata University in Zlín, Czech Republic. He successfully completed all examinations, including the state doctoral examination (June 2023), in fulfilment of the duties associated with the programme of study. The dissertation work is focused on defining the impact of varying processing parameters and surface treatments on the interfacial adhesion between materials employed in the production of multi-component products via injection overmolding technology. A representative set of materials utilized for the inserts includes aluminum and polyacrylate-based composite reinforced with glass fabric, while polyketone, poly(phenylene) sulfide, and glass-filled polybutylene terephthalate were employed for overmolding.

The dissertation was submitted in the form of a monograph, which provided a comprehensive description of the research area, including an overview of the overmoulding technology with respect to materials variety and processing conditions. The experimental section of the dissertation demonstrated that, while the most significant processing parameter of overmoulding technology is mould temperature, regarding surface modification, roughness appears to be the dominant parameter for various materials combinations. The central thesis of the dissertation was presented in two articles published in the journal *Materials*, in which Ashish Matta served as the lead author in both cases. In addition, Ashish Matta presented the results of his research at an international conference focused on materials and processing technologies. Furthermore, Ashish underwent three months of training at Bamipa s.r.o. in Slovakia.

In conclusion, during his tenure at the TBU in Zlín, Ashish Matta has demonstrated the requisite diligence, knowledge, and effort to successfully complete the PhD programme. Based on these observations, I recommend that the submitted dissertation be defended and that upon successful completion, Ashish Matta be awarded the Doctor of Philosophy (Ph.D.) degree.

In Zlin 2. July 2024

prof. Ing. Tomáš Sedláček, Ph.D.