



## Stanovisko školitele

Ing. Shehab Hassan Attia  
**Téma práce: Studying of the fluid's property  
adjustment and its application in  
metal foam industry**

The presented dissertation deals with the issue of experimental and numerical investigation of the foaming process used for a production of metal foams. The investigated scientific topic is essential for the new material production processes and is based on the specific needs of the industry. The investigated problem is also theoretically quite demanding and a lot of basic knowledge are still missing today. For this reason, Ph.D. candidate had to simplify the issue and replaced the real aluminum alloys by the chemical materials with the similar material properties. This new chemical component was examined experimentally and the material properties leading the flow features have been identified. For the calculations the Fluent/Ansys has been used for the 2d and 3D simulation of the bubble formation and propagation. These results have been partially compare with the experimental one. Just for the purpose of experiments, Ph.D. candidate has made his own verification experimental model and designed a method of measuring important parameters, such as dynamics and shape of the bubble generations. The weakness of scientific work is the relatively weak result publication and therefore result presentation to the scientific community. This fact was reflected in the quality of result interpretation and in the connection of results with the requirements of industrial needs. The work also makes insufficient use of research results for use in a specific device and in a specific technology.

Despite evident problems with the conclusion formulation and scientific discussion, the submitted dissertation meets the general formal requirements for this type of final thesis, and therefore, as a supervisor, I recommend it to the review and defense process.

Prof. Ing. Karel Fraňa, Ph.D.

V Liberci, dne 14. března 2022

