



DEEP TECH 2M

# BOOK OF ABSTRACTS

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## Tribological properties of different 3D printed polymer samples

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### Abstract

The disadvantages of conventional ABS material were overcome with the ABS+ polymer material, which is the most used in the production of prototypes. PLA bronze has slightly worse tribological characteristics than common PLA material. The experiment was performed on block-on-disk tribometer in dry sliding conditions. Blocks for investigation had dimensions 15x10x6.35 mm, disk diameter 35 mm, material for making disk steel 50CrMo4. During the experiment normal load and sliding speed remain constant, 80 N and 0.5 m/s respectively. Sliding distance was 150 m. The obtained results confirm the hypothesis that PLA bronze has slightly worse tribological characteristics than PLA, while ABS+ has better tribological properties than conventional ABS polymer.

ABS+ represent the multifunctional material for 3D printing, especially for production of prototypes. The advantages compared to ABS polymer are increased hardness and resistance to friction and wear. The printing is easier and faster, and is not necessary to print in a closed chamber. ABS+ is possible chemically and mechanically change in order to use it in the production of highly specialized and unique products. ABS+ is used in the industry, where the production of prototypes and different parts for final usage needs increased endurance. PLA bronze it is not reliable with extremely bad technical and operational characteristics. The results shown that the volume of the worn part is the highest in PLA bronze, while the coefficients of friction were huge in all experiments.