

## **Strength of contact geometry for multi-material 3D printed samples**

V. Ermolai<sup>1,2\*</sup>, A. Sover<sup>2</sup>, G. Nagit<sup>1</sup>

<sup>1</sup>"Gheorghe Asachi" Technical University of Iasi, Department of Machine Manufacturing Technology, Blvd. D. Mangeron, 59A, 700050 Iasi, Romania

<sup>2</sup>Ansbach University of Applied Sciences, Faculty of Technology, Residenzstraße 8, 91522 Ansbach, Germany

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### **Abstract.**

Fused Filament Fabrication has become one of the most used Additive Manufacturing technologies due to the relatively low-cost equipment and the great variety of materials from standard to engineering-grade thermoplastics. Furthermore, multiple extrusion systems allowed new opportunities regarding the manufacturing of multi-colour and multi-material components. However, standard bond formation of part's bodies provided by the slicing software offers good results regarding the resulting products' dimensional stability but poor mechanical properties. For this reason, this paper aims to investigate if the mechanical properties of compatible polymers can be enhanced by modifying the conventional flat surface to a flat surface with geometries that can conveniently be added even on complex surfaces. Furthermore, for a broader understanding of the bond formation, the design of the experiment comprised two groups referring to the process parameters and contact geometry which was constrained with functions of nozzle output size. The results showed that the mechanical properties of multi-material bonds could be enhanced by using modified contact geometries.