



LATVIJAS  
UNIVERSITĀTE

NACIONĀLAIS  
ATTĪSTĪBAS  
PLĀNS 2020



EIROPAS SAVIENĪBA  
Eiropas Reģionālās  
attīstības fonds

ĪEGULDĪJUMS TAVĀ NĀKOTNĒ

**Project name:** “Decision tool for optimal design of smart polymer nanocomposite structures produced by 3d printing”

**Project No:** 1.1.1.1/19/A/031

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## **PROJECT IMPLEMENTATION ENDED ON 30.06.2023.**

During the implementation of the project, the Institute of Materials Mechanics University of Latvia in cooperation with SIA ZRF "RITEC" and SIA "Baltic Scientific Instruments" in the period from 01.07.2020. to 30.06.2023. successfully implemented the project: “Decision tool for optimal design of smart polymer nanocomposite structures produced by 3d printing”

### **Results attained during the implementation of the project:**

**1. Knowledge database** for different materials with physical and mechanical properties of printed samples.

**2. Decision Tool** is a set of tools for the optimal design of conductive 3D printed parts and a systematised set of practical information based on scientific research that describes guidelines for producing new smart polymer nanocomposite structures.

**3. Original scientific papers and conference presentations** on the project results.

**DT** includes:

- 1) Materials database with physical and mechanical parameters required for simulation;
- 2) Simulation moduli:
  - a) application for the finite element model preparation and simulation of the mechanical and physical properties of the Fused Filament Fabrication (FFF) printed material, taking into account printing parameters and microstructure of the printed material;
  - b) application for the finite element model preparation and simulation/optimisation of the mechanical and physical properties of the composite samples with embedded conductive tracks;
  - c) application for the finite element model preparation and simulation of housing prototypes with enhanced functionality.
- 3) User manual.

30.06.2023.