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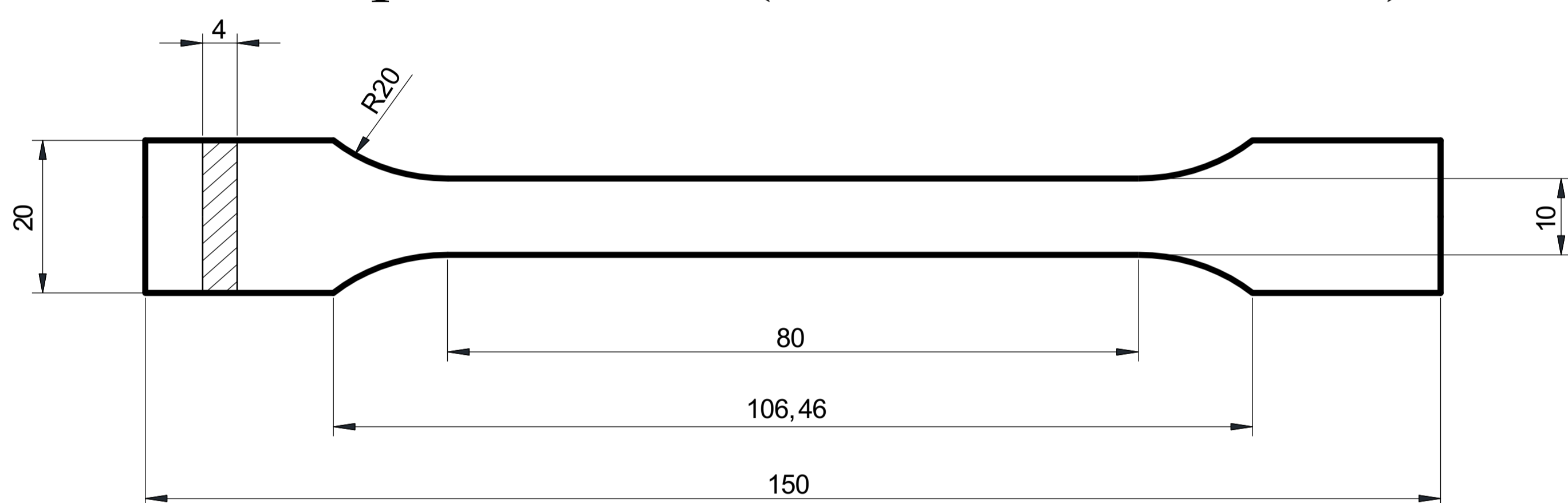
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## OBJECTIVE

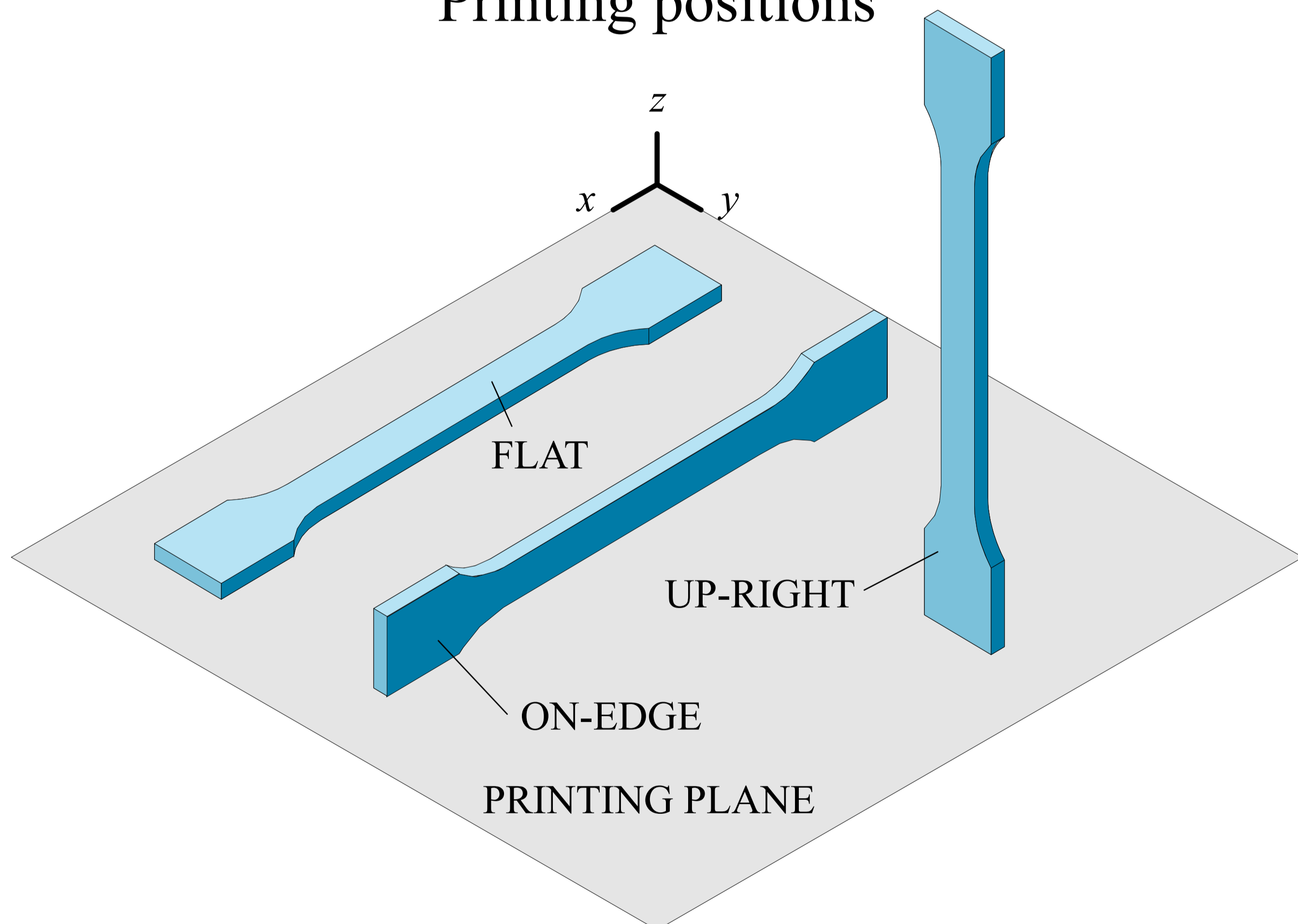
The work presents an empirical study of the 3D printing of low-filled poly-(lactic acid) parts, in order to determine the influence of the printing plane on the mechanical strength, elasticity modulus, deformation and microstructure of the manufactured specimens.

## EXPERIMENTAL SETUP

Test Specimen 1A (EN-ISO 527-2: 1996)



Printing positions



Printing positions

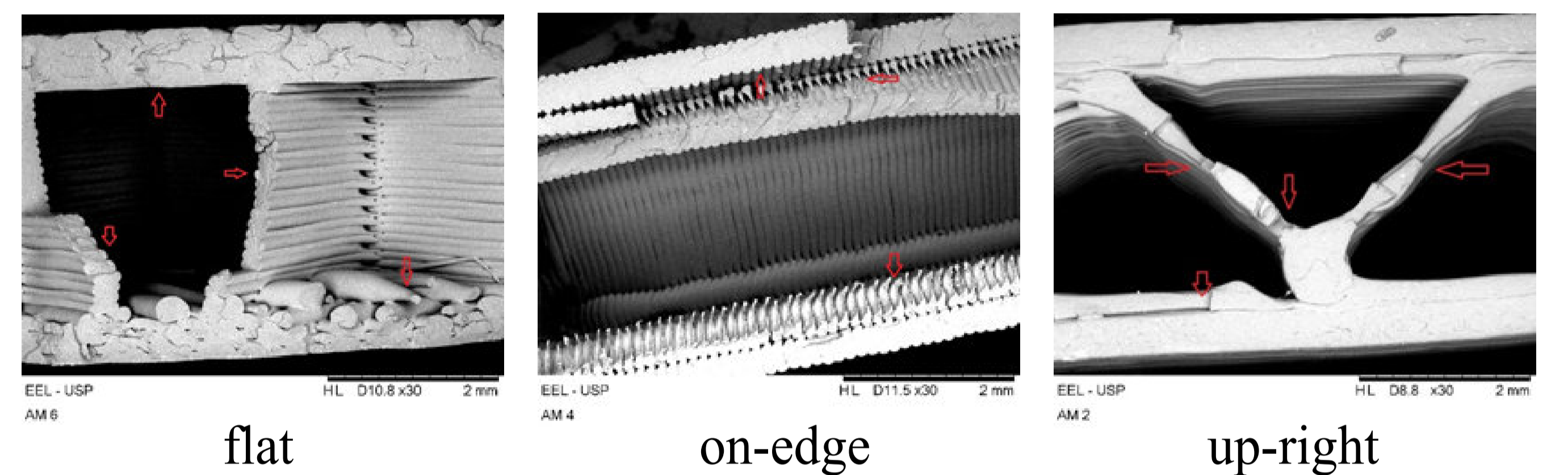
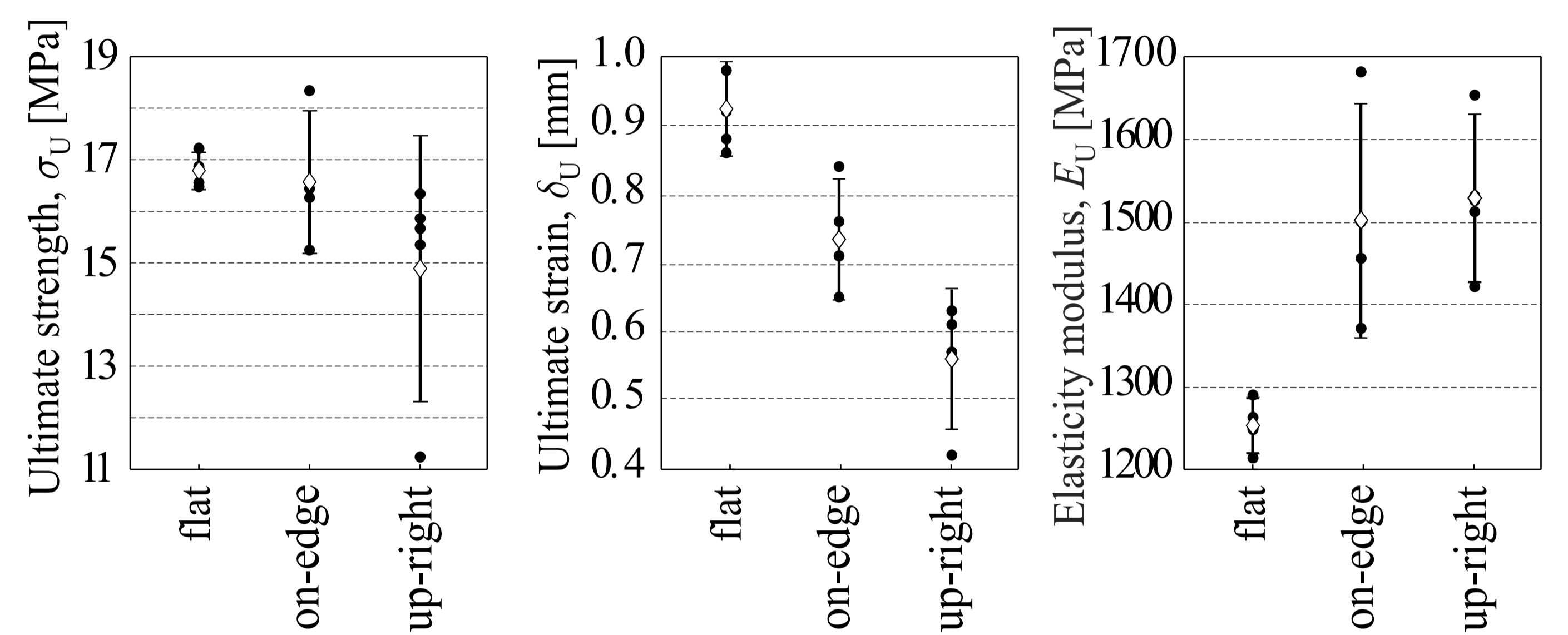
Printing positions	Layer height [mm]	Fill density [%]
Flat	0.12	20
On-edge		
Up-right		

Fill density

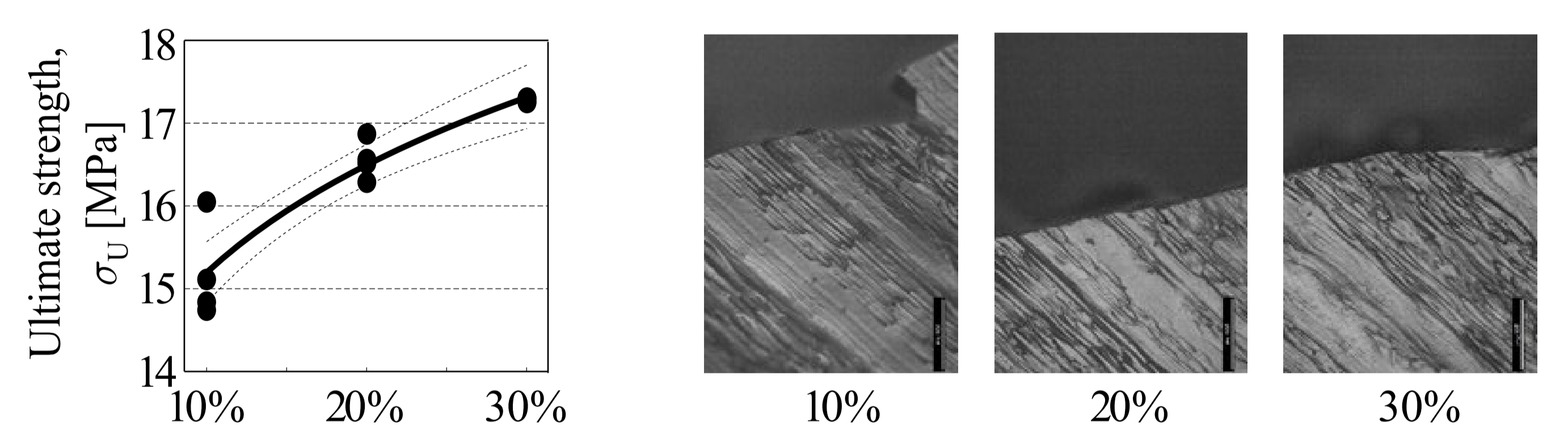
Printing positions	Layer height [mm]	Fill density [%]
Flat	0.12	10
		20
		30

## RESULTS

Influence of printing position



Influence of the fill density (flat printed)



## CONCLUSIONS

- Higher values of tensile strength and deformation correspond to the flat printing position. Higher value of elasticity modulus correspond to up-right printing position.
- Higher spread of the measured values of all parameters was noted in up-right printed specimen.
- Fragile breakage took place on flat and on-edge printed specimens. Delamination was identified in up-right.
- Increasing the fill density raised the ultimate strength in flat printed specimens.