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International Journal of Recent Technology and Engineering [Open Access](#)
Volume 7, Issue 6, March 2019, Pages 175-179

Optimization of parameters in three-dimensional printing objects with fused deposition modeling technology against geometry accuracy (Article)

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Abstract

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Dimensional printing object to produce accurate geometry in accordance with the planned. The process parameters investigated are layer height, print speed, perimeter shells and polishing time. Test specimens made with polymaker polysmoothTM material refer to ASTM D995-08 using 3D Printer type Fused Deposition Modelling (FDM). The measurement data were analyzed using ANOVA with design type 2 factorial level and design 4 factorial interactions (4FI) modelled by Design Expert® software. The result of ANOVA is known that the factors significantly ($\alpha = 0.05$) have an effect on the geometry of 3D printing object and the optimum parameter combination that is height layer=0.14 mm, print speed=51.73 m/s, perimeter shells=3 mm with polishing time=20 minutes. © BEIESP.

SciVal Topic Prominence ⓘ

Topic: Bioprinting | Tissue engineering | Cell printing

Prominence percentile: 99.938 ⓘ

Author keywords

2 level factorial ANOVA Optimization Three-dimensional printing

Funding details

Funding sponsor	Funding number	Acronym
Kementerian Riset Teknologi Dan Pendidikan Tinggi Republik Indonesia		

Funding text

The authors acknowledge funding support from the Directorate of Research and Community Service of the Ministry of Research, Technology and Higher Education of

ISSN: 22773878

Source Type: Journal

Original language: English

Document Type: Article

Publisher: Blue Eyes Intelligence Engineering and Sciences Publication

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