Data for Article - CONVEX (CONtinuously Varied EXtrusion): A new scale of design for additive manufacturing

Appendix A. Print settings

For plots that included low, middle and high groupings (Figure 10, Figure 11 and Figure 13), the values of speed or retraction/un-retraction for section 2 of the specimen are listed in Tables A1, A2 and A3, respectively.

Table A1 Table of printing setting used for Figure 10 in the study.

Printing settings	Unit	Groupings	Type of printer	
			Direct drive	Bowden
Speed only	$m.min^{-1}$	Low	1.5	1.5
		Middle	2.5	2.0
		High	5.0	3.0
Width + speed	$m.min^{-1}$	Low	1.5	2.0
		Middle	3.0	2.5
		High	6.0	4.0
Retraction only	mm (direct drive) & mm^3 (Bowden)	Low	0.04	4.0
		Middle	0.12	10.0
		High	0.20	18.0
Width + retraction	mm (direct drive) & mm^3 (Bowden)	Low	0.04	8.0
		Middle	0.10	14.0
		High	0.20	18.0

Table A2 Table of printing setting used for Figure 11 in the study.

Printing settings	Unit	Groupings	Type of printer	
			Direct drive	Bowden
Width + speed	$m.min^{-1}$	Low	1.0	1.5
		Middle	2.0	2.5
		High	4.5	4.0
Width + retraction	mm (direct drive) & mm^3 (Bowden)	Low	0.02	2.0
		Middle	0.08	10.0
		High	0.18	18.0

Table A3 Table of printing setting used for Figure 13 in the study.

Printing settings	Unit	Groupings	Material			Layer height (mm)	
			ABS	PLA	Nylon	0.1	0.2
Width + speed	$m.min^{-1}$	Low	2.0	2.0	2.0	1.0	1.0
		Middle	3.0	3.5	3.0	2.0	1.5
		High	6.0	5.5	5.0	4.5	5.5

Appendix B. Videos of variable-speed printing

A video of the variable-speed printing process for meshes in the third case study is provided.

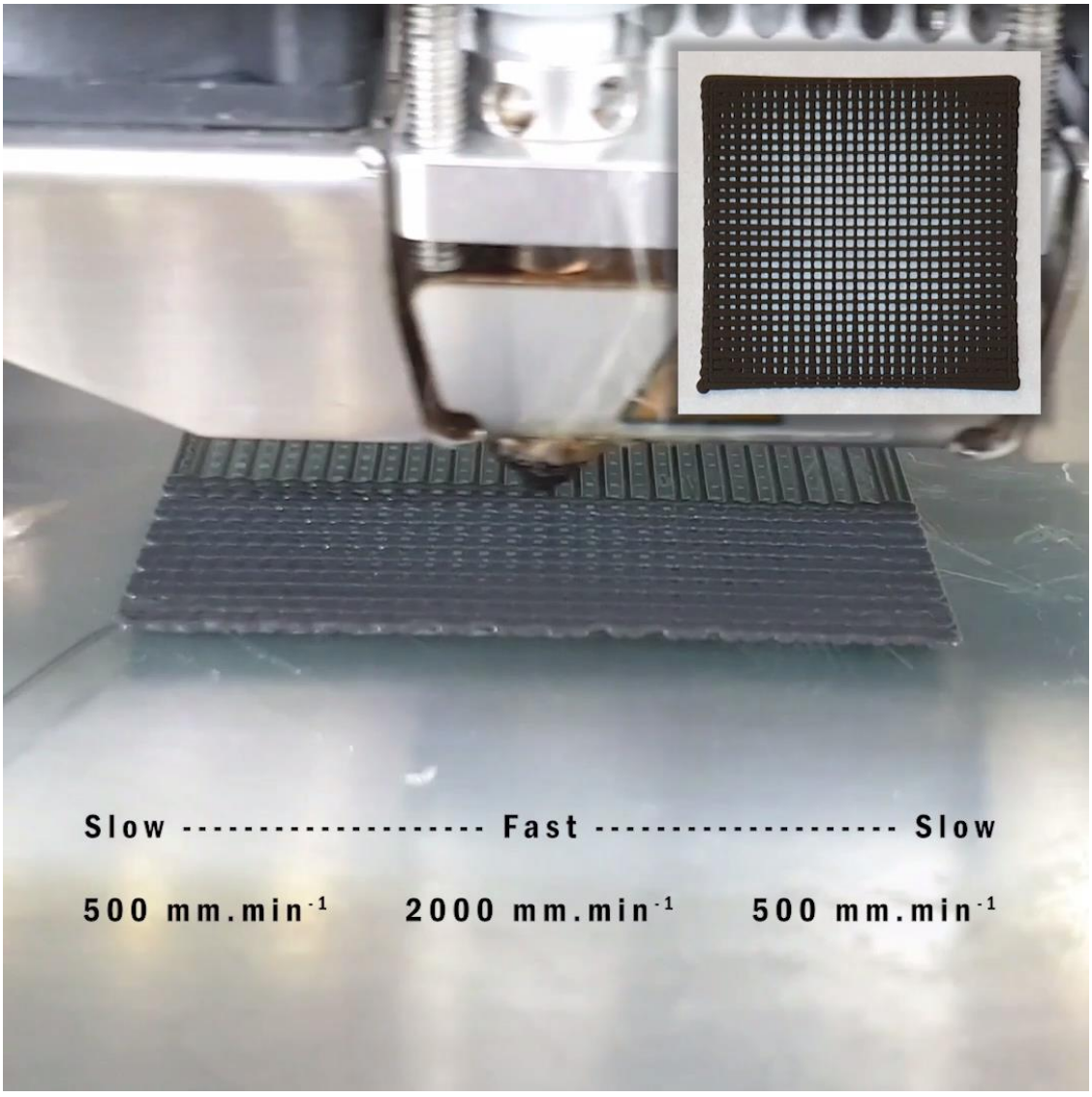

Figure B1 Still image from the video.