

# Three-dimensional printing of continuous-fiber composites by in-nozzle impregnation

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## Supplementary Information

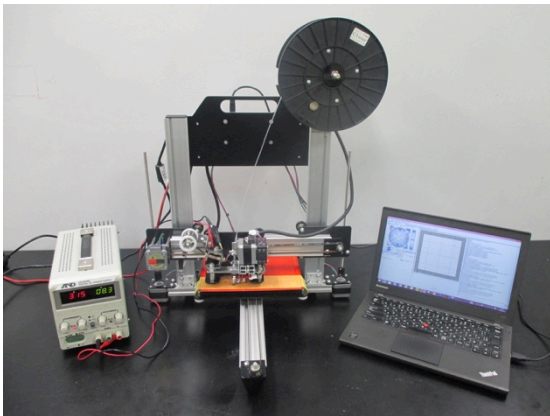


Fig. 1 The 3D printer used for fabricating continuous-fiber composites by in-nozzle impregnation.

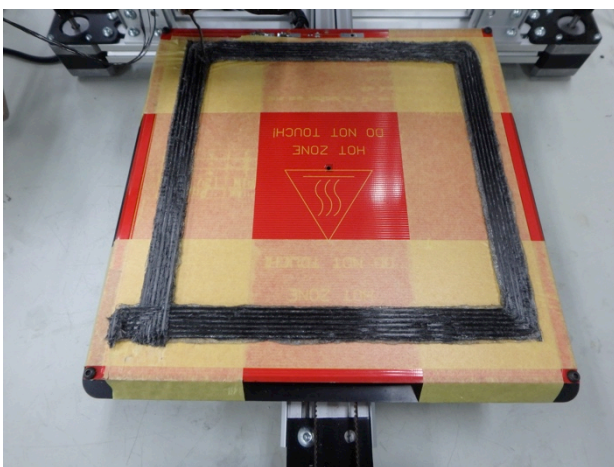


Fig. 2 Specimen fabrication of CFRTPs by 3D printing. Four specimens were sliced from the four sides.

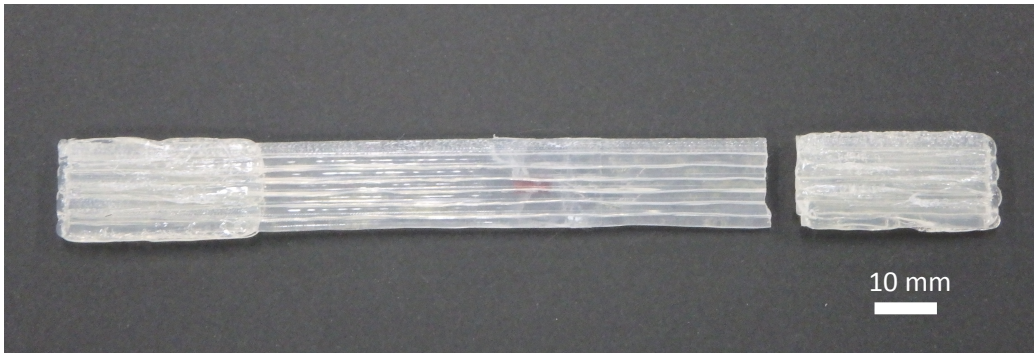


Fig. 3 PLA specimen fabricated by 3D printing after the tensile test.

Table 1. Tensile mechanical properties of materials used for 3D printing and 3D printed specimens.

	Carbon fiber <sup>47</sup>	Jute fiber	PLA	3D printed specimen	
				CFRTP ( $\nu_f=0.066$ )	JFRTP ( $\nu_f=0.061$ )
Tensile modulus [GPa]	294	27.4 ( $\pm 7.81$ )	3.25 ( $\pm 0.0577$ )	19.5 ( $\pm 2.08$ )	5.11 ( $\pm 0.410$ )
Tensile strength [MPa]	5880	417 ( $\pm 111$ )	42.6 ( $\pm 2.62$ )	185.2 ( $\pm 24.6$ )	57.1 ( $\pm 5.33$ )
Tensile strain-to-failure [%]	2.0	2.81 ( $\pm 0.324$ )	1.45 ( $\pm 0.0945$ )	0.95 ( $\pm 0.0873$ )	1.81 ( $\pm 0.448$ )