Supplementary Materials: Resistivity and Its Anisotropy Characterization of 3D-Printed Acrylonitrile Butadiene Styrene Copolymer (ABS)/Carbon Black (CB) Composites

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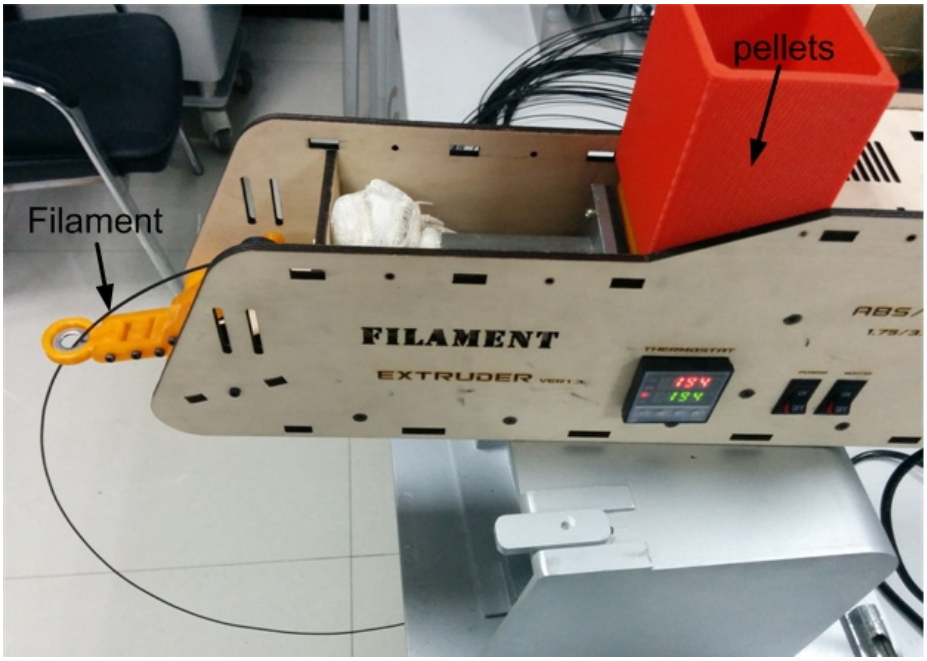

Figure S1. The fabrication of filaments from pellets by the single screw extruder.

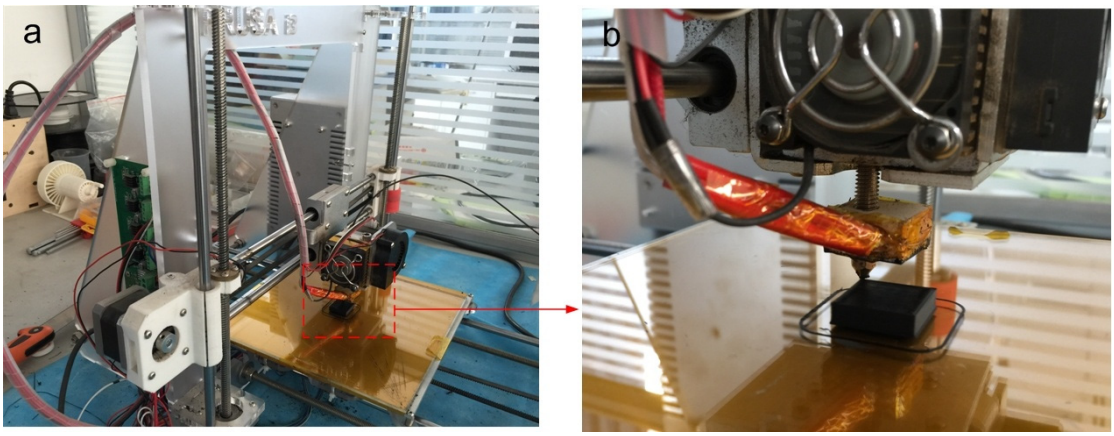

Figure S2. The fabrication of samples by 3D printer. (**a**) Prusa i3 3D printer; and (**b**) the extrusion of fibers from filament and the deposition of a sample.

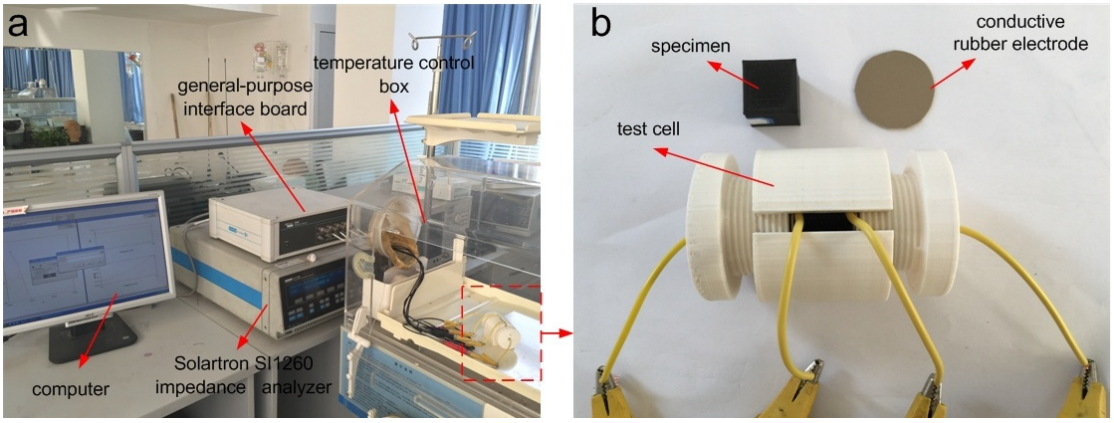

Figure S3. Resistivity measurement system. (**a**) Measuring instrument, including a Solartron SI1260 impedance analyzer, a general-purpose interface board, a computer, and a controlled temperature box; and (**b**) the test cell, also including the conductive rubber electrode and the specimen.

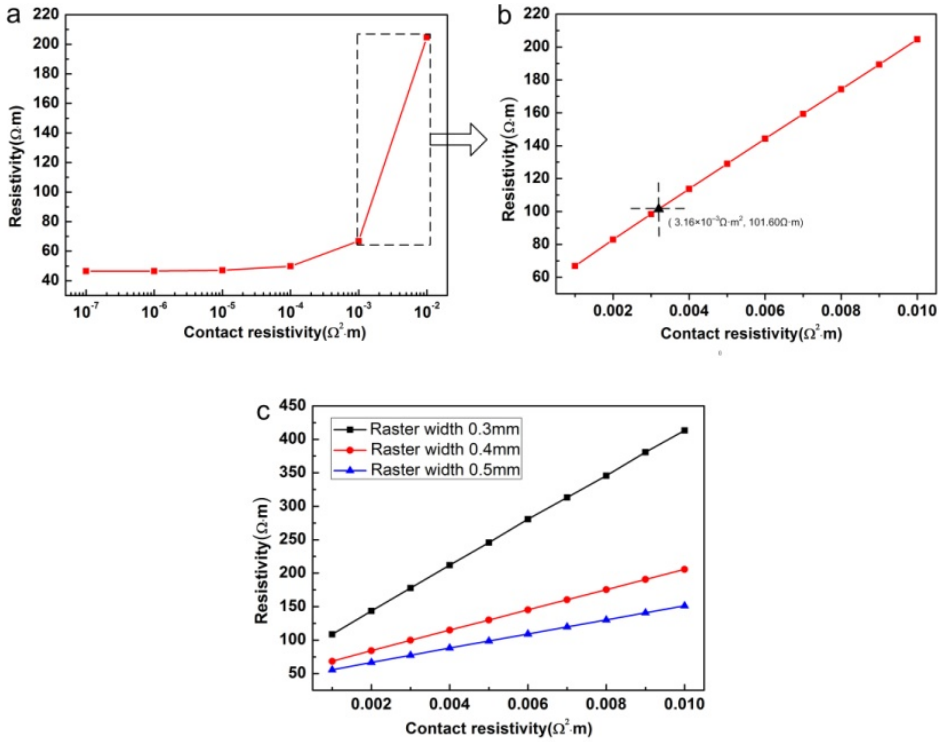

Figure S4. The relationship between the resistivity in the vertical direction and the contact resistivity.

Table S1. Experimental design showing the three-level, three-factor factorial design and experimental results, including resistivity in the vertical direction (*R*1), resistivity in the horizontal direction (*R*2), and anisotropy (frequency = 1 kHz).

No.	Factor			First			Second			Third		
	A (Layer Thickness)	*B* (Raster Width)	*C* (Air Gap)	*R*1 (Ω·m)	*R*2 (Ω·m)	Anisotropy	*R*1 (Ω·m)	*R*2 (Ω·m)	Anisotropy	*R*1 (Ω·m)	*R*2 (Ω·m)	Anisotropy
1	1	1	1	140.28	51.38	2.73	126.44	48.11	2.63	157.36	48.21	3.26
2	1	1	2	157.56	54.11	2.91	145.8	51.03	2.86	132.8	51.81	2.56
3	1	1	3	128.12	48.58	2.64	167.84	48.23	3.48	131.1	49.87	2.63
4	1	2	1	109.6	51.7	2.12	86.32	49.51	1.74	95.42	52.29	1.82
5	1	2	2	94.84	43.34	2.19	75.84	42.4	1.79	82.7	42.98	1.92
6	1	2	3	118.56	54.64	2.17	124	53.1	2.34	122.56	54.63	2.24
7	1	3	1	69.28	40.48	1.71	73.68	40.69	1.81	68.25	44.55	1.53
8	1	3	2	82.92	49.51	1.67	112.28	45.38	2.47	94.43	46.98	2.01
9	1	3	3	96.88	52.61	1.84	105.16	54.69	1.92	100.84	51.72	1.95
10	2	1	1	177.4	54.3	3.27	153.76	57.05	2.7	140.61	57.35	2.45
11	2	1	2	141.08	45.84	3.08	151.44	44.09	3.43	193.41	45.3	4.27
12	2	1	3	171.72	54.24	3.17	188.08	55.64	3.38	181.2	54.61	3.32
13	2	2	1	97.56	41.93	2.33	105.68	43.23	2.44	99.89	40.84	2.45
14	2	2	2	123.36	52.26	2.36	149.08	48.25	3.09	111.52	52.01	2.14
15	2	2	3	96.76	54.51	1.78	119.32	53.13	2.25	102.36	50.69	2.02
16	2	3	1	73.52	46.31	1.59	77.84	43.73	1.78	78.29	45.61	1.72
17	2	3	2	73.44	55.39	1.33	94.48	53.13	1.78	94.72	56.32	1.68
18	2	3	3	86.8	49.3	1.76	93.56	46.1	2.03	91.25	45.64	2
19	3	1	1	133.24	47.2	2.82	156.8	51.15	3.07	167.9	50.46	3.33
20	3	1	2	151.84	55.3	2.75	177.44	56.84	3.12	182.67	58.63	3.12
21	3	1	3	119.48	51.45	2.32	163.88	50.12	3.27	142.3	51.09	2.79
22	3	2	1	109.44	47.39	2.31	106.56	50.37	2.12	125.76	52.16	2.41
23	3	2	2	101.2	54.08	1.87	108.56	59.05	1.84	105.19	55.08	1.91
24	3	2	3	99.56	53.52	1.86	118.6	51.42	2.31	113.14	53.11	2.13
25	3	3	1	81.92	55.09	1.49	90.16	61.9	1.46	89.65	60.59	1.48
26	3	3	2	71.36	46.73	1.53	75.12	51.94	1.45	83.4	48.87	1.71
27	3	3	3	91.88	59.06	1.56	135.84	57.96	2.34	118.04	58.04	2.03