Supporting Information

A novel flexible silver heater fabricated by solution-based polyimide metallization and inkjet-printed carbon masking technique

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S1: The resolution of ICM technique

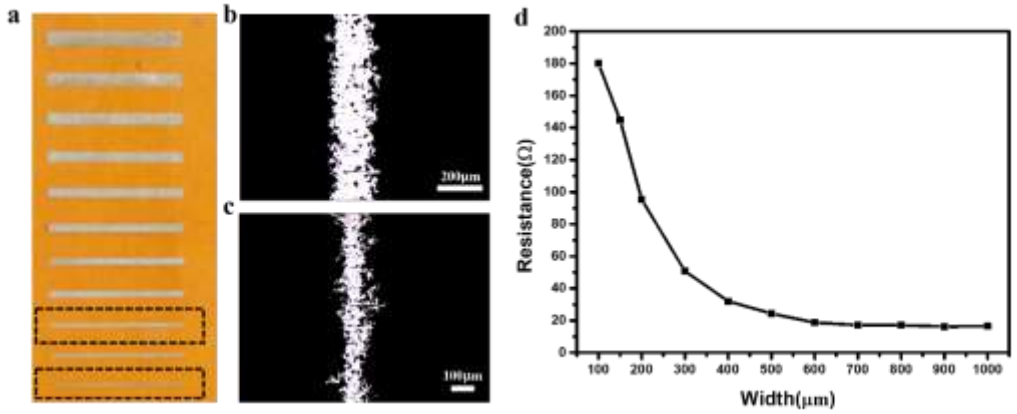

Figure S1: The resolution of ICM technique. (a) The widths of Ag lines made by ICM technique are 1mm, 900μm, 800μm, 700μm, 600μm, 500μm, 400μm, 300μm, 200μm, 150μm and 100μm respectively. The all lengths of Ag lines are 1cm. (b)(c) The amplified photos of Ag lines with 200μm and 100μm. (d) The relationship between the resistances and the widths of Ag lines under the same reduction time.

S2: FLIR photos

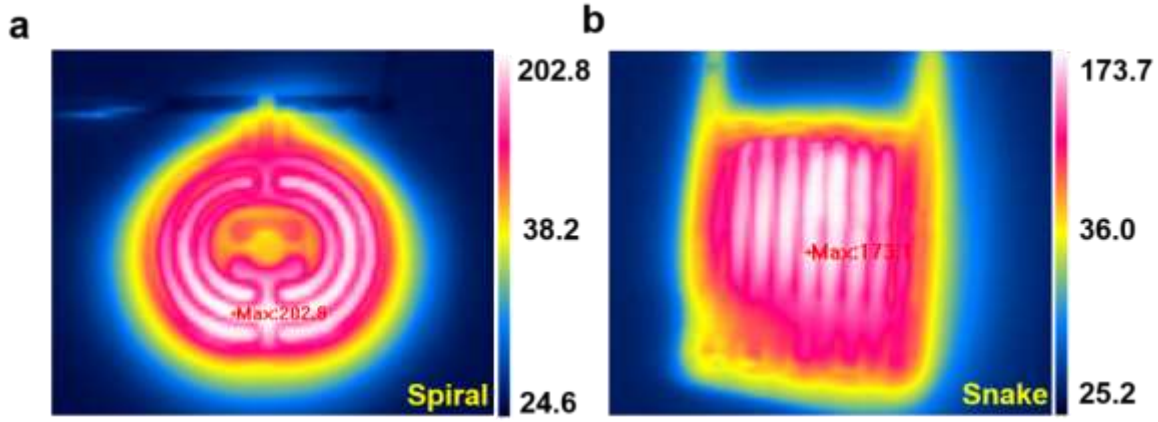

Figure S2. FLIR photos of two kinds of Ag film heaters with heating voltage 18V and approximate resistance 150Ω (a) spiral-shape, (b)snake-shape

Figure S2 shows the temperature distributions of two kinds of Ag film heaters. As shown in Figure S2, under the same applied voltage ~18V, the spiral-shape resistors can achieve a higher temperature (202.8℃), comparing to the snake-shape resistors (173.1℃). It can be indicated that the temperature distribution is affected by the heater configuration.

S3: The time-dependent temperature curves

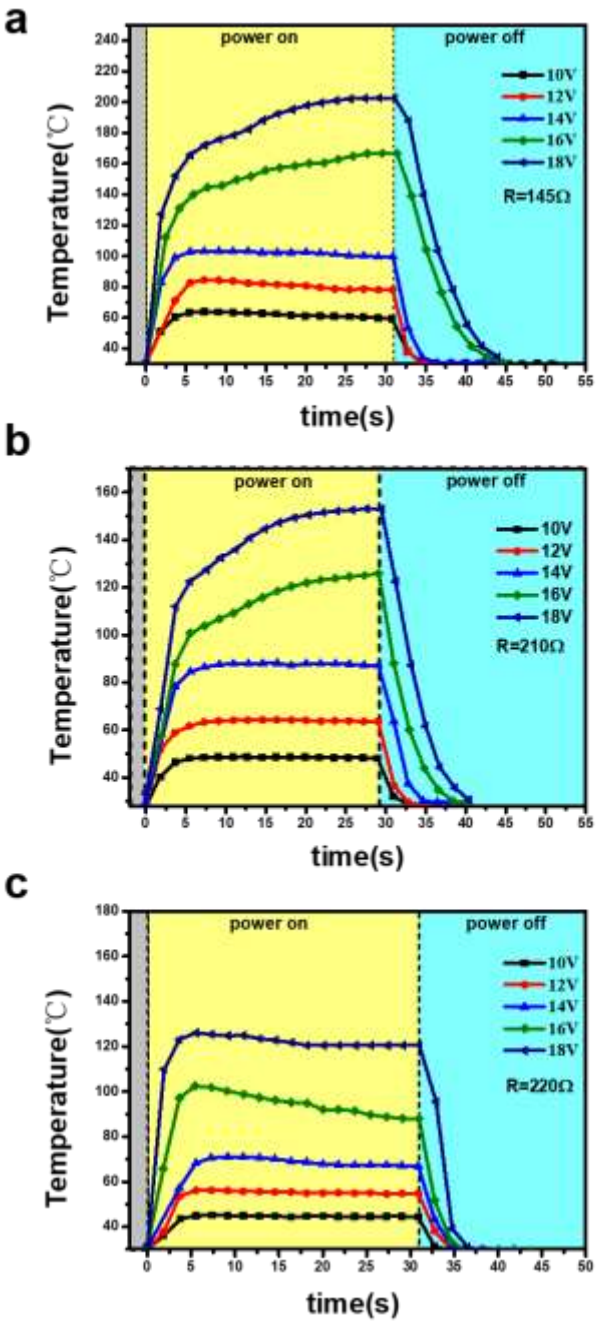

Figure S3. The time-dependent temperature curves under different applied voltages from 10 to 18V with the resistances of (a) 145Ω, (b) 210Ω, (c) 220Ω

Figure S3 shows the time-dependent temperature curves under different applied voltages from 10 to 18V with the resistances of 145Ω, 210Ω and 220Ω. The all three curves proved that the obtained maximum temperature increased with the applied voltage increased.

S4: The response time and recovery time of 128Ω heater

Table S1: The response time and recovery time of 128Ω heater under different applied voltages

Voltage(V)	Response time(s)	Recovery time(s)
10	3.65	13.52
12	3.62	7.172
14	5.01	10.05
16	3.28	10.91
18	4.36	11.96

Video S1.avi. The modified PI immersed in $AgNO_3$ solution to complete the ion-exchange process.
Video S2.avi. The carbon-ink patterns were generated on modified PI via the office-use inkjet printer with the aid of ICM technique.
Video S3.avi. The batch fabrication of selective Ag film was realized in the reduction process.
Video S4.avi. The batch Ag heaters are highly flexible and have good conductivity.