

Supporting Information

ZnO Nanowires Integrated Bio-microchip for Specific Capture and Non-destructive Release of Circulating Tumor Cells

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1. Characterizations supplementary

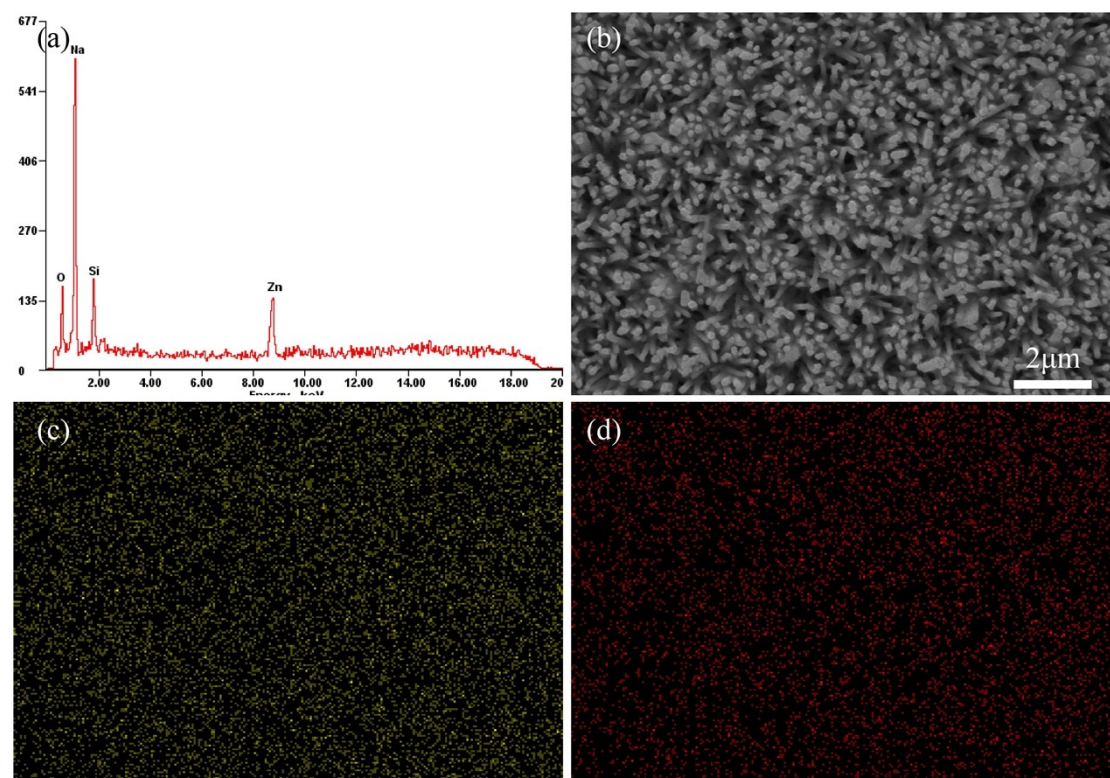


Fig. S1 (a) The EDS elemental mapping analysis of the ZnO nanowires. (b) SEM image. (c) Zn element. (d) O element.

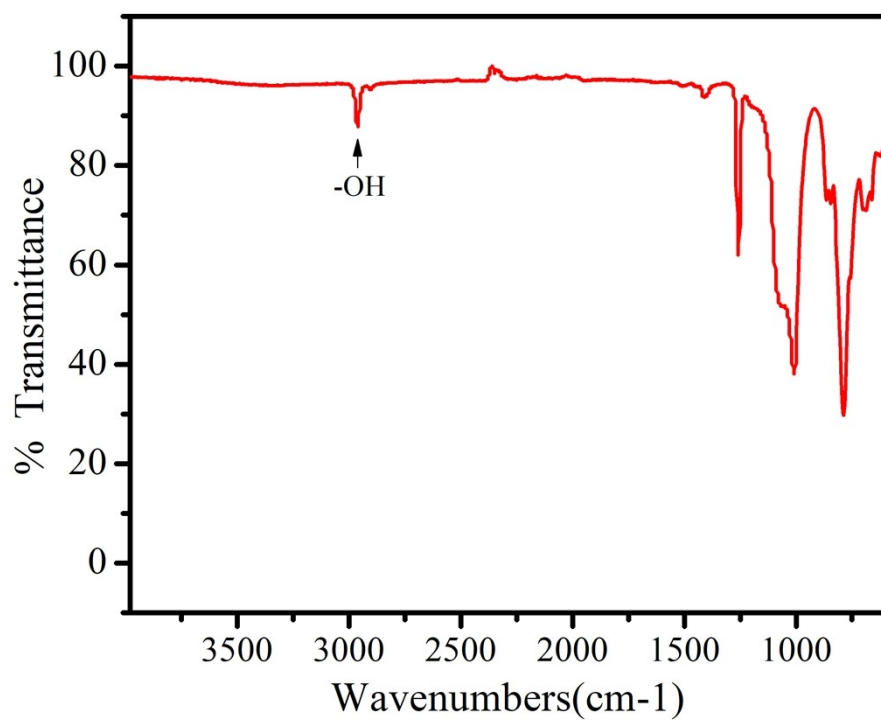


Fig. S2 FT-IR spectra of ZnO-coated G-PDMS pillars microchip.

2. Cell captured supplementary

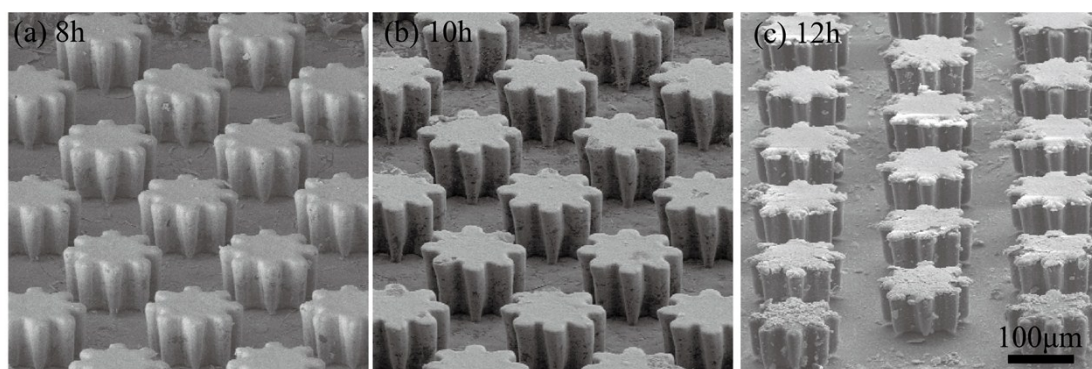


Fig. S3 The thickness ZnO nanowires at different reaction times (8h, 10h,12h). Scale
bar:100 μm .

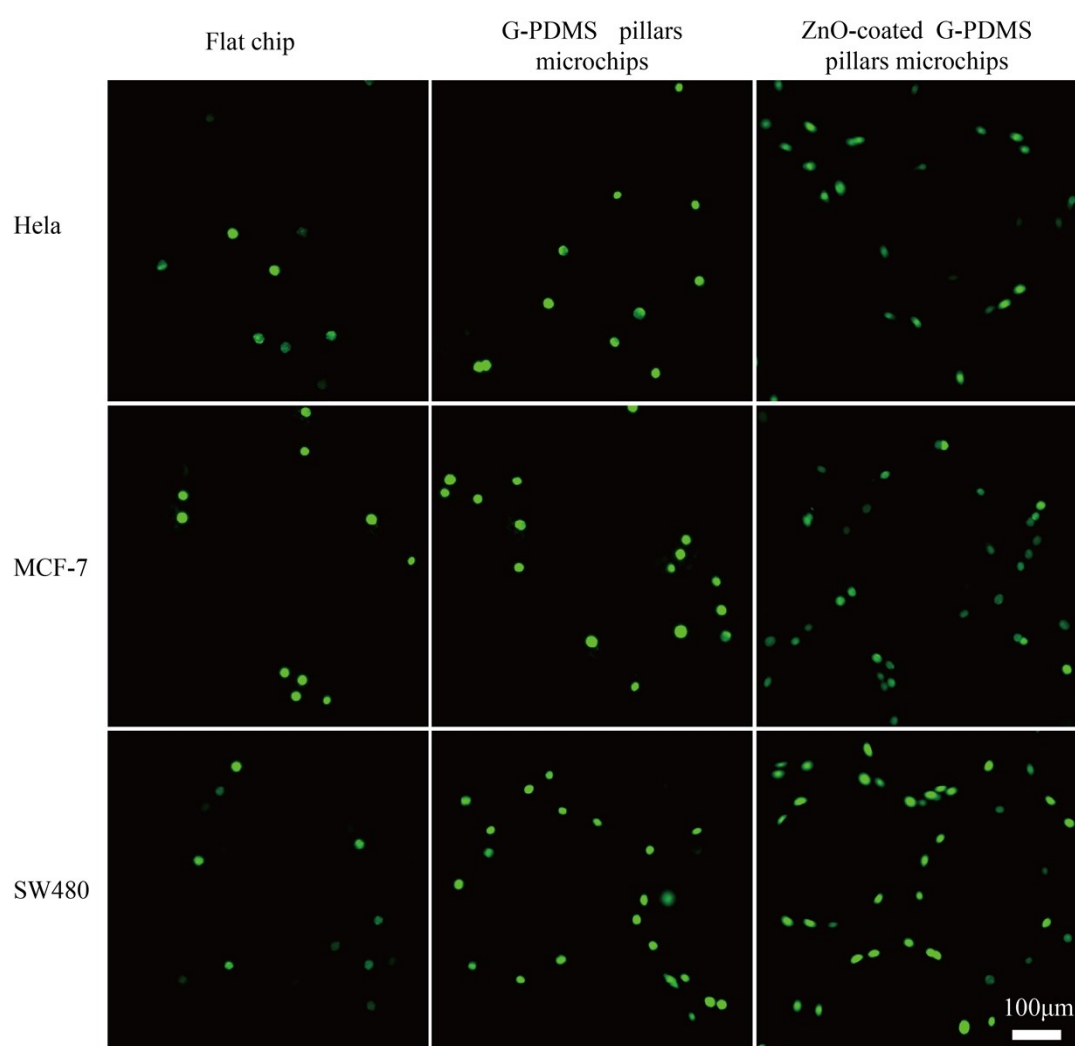


Fig. S4 The Hela, MCF-7 and SW480 captured-cells image using different microchip (Flat chip, G-PDMS pillars chips and ZnO-coated G-PDMS pillars chips) Scale bar:100 μm .

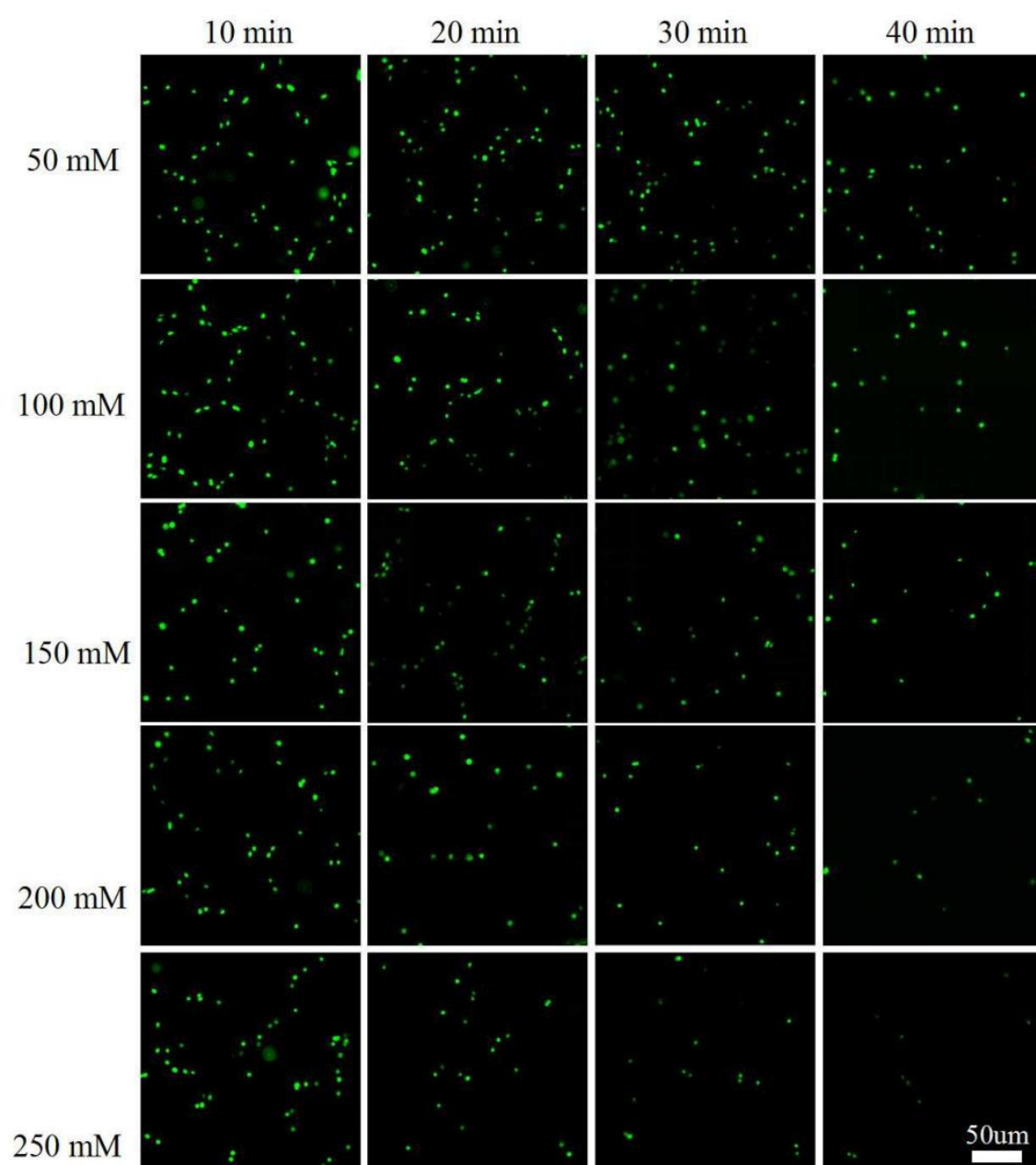


Fig. S5 The image of release cells at different concentrations of sodium citrate solution (50 mM, 100 mM, 150 mM, 200 mM, 250 mM) and at different times (10 min, 20 min, 30 min, 40 min).

Spike CTCs in 1mL blood sample		Spiked number of CTCs				
		1000	3000	5000	7000	10000
Specifically captured CTCs	Capture yeild	814	2325	4049	5465	7681
	Capture efficiency	81.44% ± 6.89%	77.5% ± 3.6%	80.98% ± 8.33%	78.07% ± 5.02%	76.81% ± 5.88%

Table S1 Artificial blood simulation experiments to test the capture efficiency (CTCs capture efficiency = (Number of captured CTCs/Number of spiked CTCs) × 100%.

Patient number	Cancer type	Age	Gender	CTC numbers (1 mL blood)
1	Breast cancer	52	female	8
2	Breast cancer	50	female	5
3	Breast cancer	54	female	14
4	Breast cancer	55	female	6
5	Breast cancer	50	female	7
6	Breast cancer	54	female	9
7	Breast cancer	49	female	3
8	Breast cancer	51	female	11
9	Breast cancer	52	female	3
10	Healthy individuals	55	female	0
11	Healthy individuals	55	male	0
12	Healthy individuals	48	female	0

Table S2 The information of breast cancer and healthy individuals.