マイクロ流路にマイクロツールを局所投入するにはどうしたらよいか？

Abstract:

Laser tweezers are suitable for manipulation of a single microscopic object. Single cell manipulation is important for biological research works. We proposed indirect manipulation of cell with the laser trapped microtools to prevent heat damaged by direct lighting of laser at a cell. We succeeded in fixation and pinpoint injection of microtools in a microchip. ITO microelectrodes are patterned on the surface of the microchannel by photolithography. The microtools are fixed on the electrode with the gelatin layer beforehand. To release the fixed tools in water, these electrodes work as micro heaters to melt the gelatin layer. Then, the released tools are caught in the microchannel by dielectrophoretic force near the electrodes. These electrodes are used to generate electric field gradient near the tools. We have confirmed the effectiveness of the proposed method by experiments.

Background:

Why microtools are needed?

Why pinpoint injection of microtools is required?

Concept:

Experiment result:

(a) Pinpoint injection by microheaters

Microtools contained Gelatin

(b) Positioning of microtools by dielectrophoretic force

Conclusions

マイクロツールを局所投入するにはどうしたらよいか?

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