

Optical spectrum measurement of a cell-adhered microcavity for the cell-cycle analysis applications



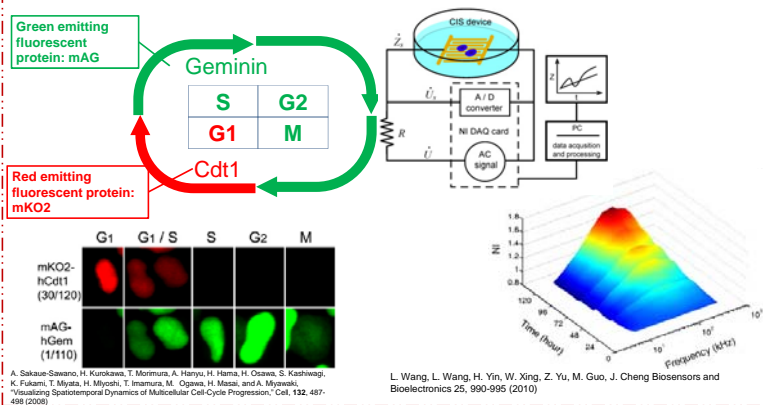
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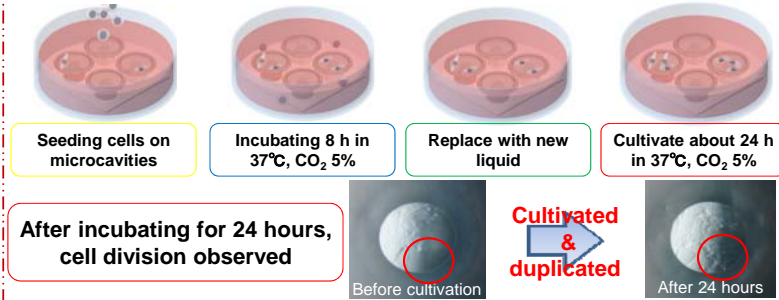
~ Abstract ~

We performed the adhesion of NIH3T3 cells on a silica whispering gallery mode microcavity and observed the division of cells. By measuring the transmittance spectrum of the cavity in medium, we obtained the refractive index of living cells. We found that the refractive index of the living cell is 1.1×10^{-3} different from water.

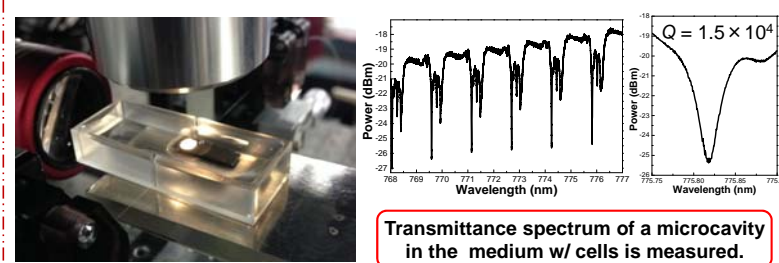
Background: Cell cycle



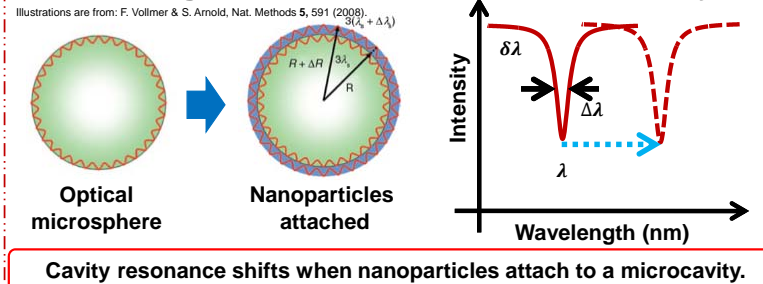
Result: Adhesion & Cell division



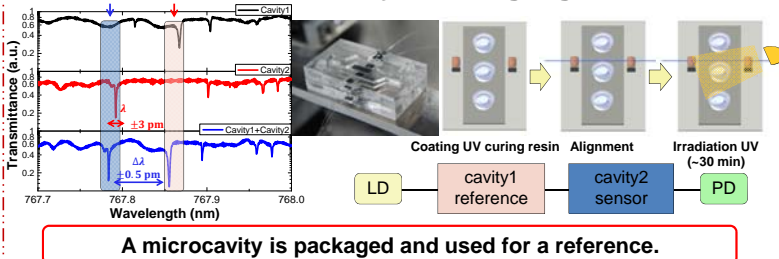
Experimental setup



Sensing principle w/ a WGM microcavity



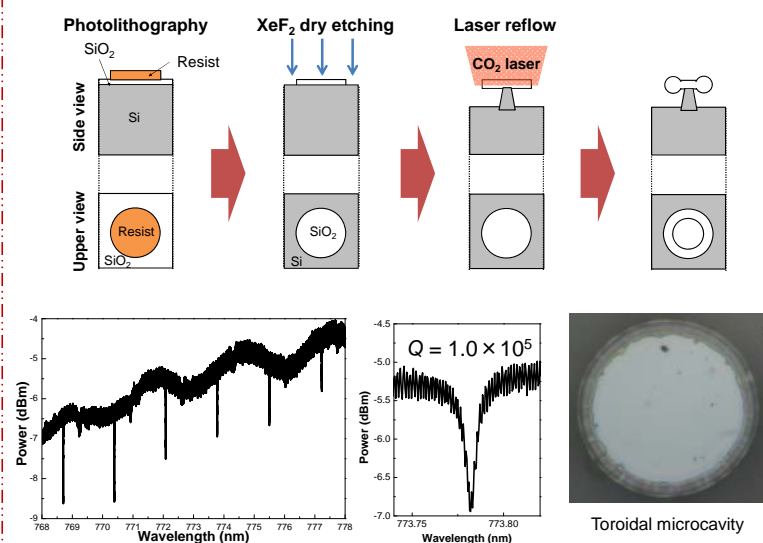
Microcavity packaging



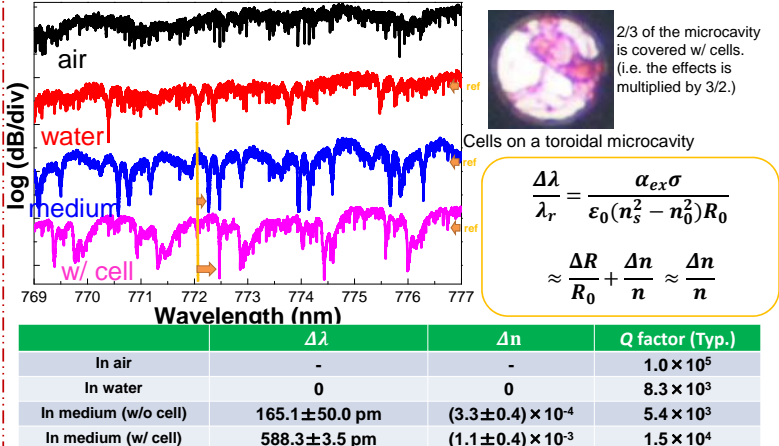
~ Objective ~

- ✓ Demonstrate cell division on a silica microcavity
- ✓ Measure the refractive index of living cells

Fabrication of a toroidal microcavity



Result: Refractive index measurement of cells



Summary

- ✓ NIH3T3 cells are adhered and cultivated on a silica toroid microcavity.
- ✓ The refractive index of living cells is obtained by measuring the shift of the cavity resonance.

Acknowledgement:

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