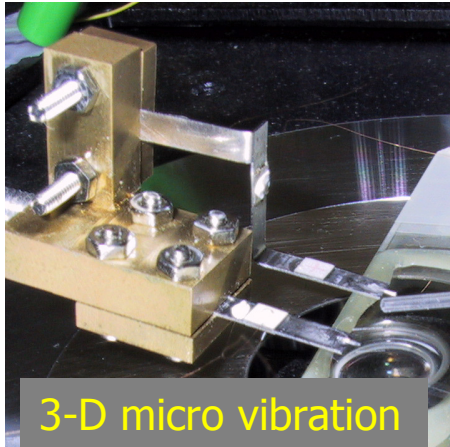
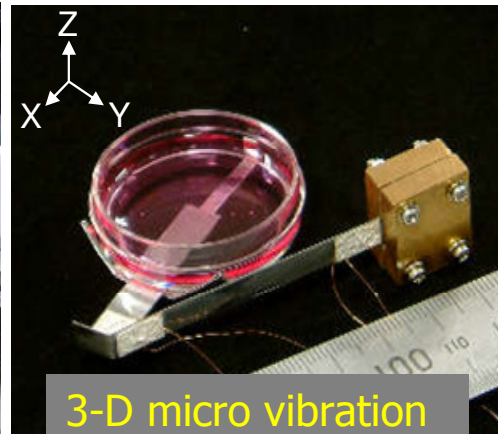


3-D sensing and actuating micro devices for living cells and tissues

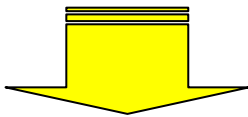
Professor Tadashi Kosawada



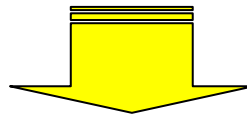
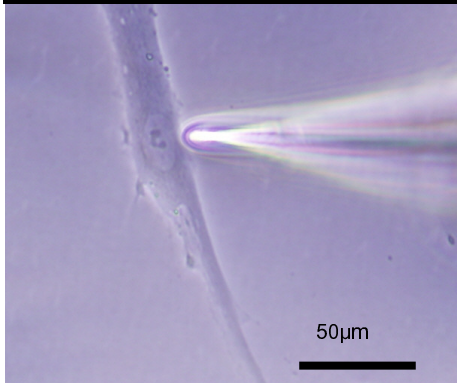
3-D micro vibration sensor - actuator



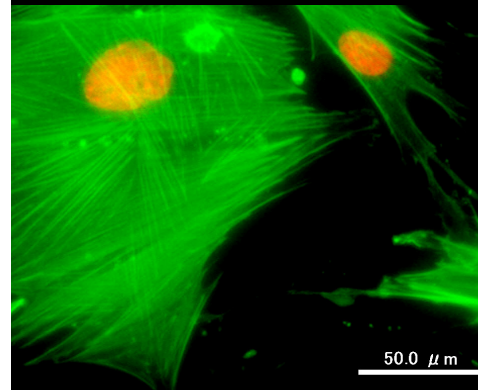
3-D micro vibration stage



Sensing and actuation for an individual cell



Dynamic stimulation & control of cultured cells



Content :

Our group has developed three dimensional(3-D) piezo electric micro vibration devices for controlling living cells and tissues. A 3-D sensor-actuator complex system (left side pict.), which enables us to have stimulation and detection of response for an individual living cell. We try to accelerate the recovery progress of the locally damaged cells by using the developed sensor-actuator complex system.

Also a developed 3-D micro vibration stage (right side pict.) is extended to control device for adhesive cells which are cultured in a dish placed in the CO₂ incubator. These devices are effective means of investigation in regenerative medicine not only for 3-D dynamic stimulation response of the cultured cells but also for active control of cellular differentiation, migration, and proliferation.

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