

Development of partially-rotating piezoelectric actuators in an intracytoplasmic sperm injection installation

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The development of a partially-rotating piezoelectric actuator is presented. This device can be thought of as a motor capable of performing incomplete rotation. The working principle of the device is based on the tangential deformation of a piezoelectric material that is being transferred to a rotor via friction force. The high-precision of piezoelectric actuator enables the motor to perform in the cellular level. This device is applied in intracytoplasmic sperm injection installation, particularly during the cell penetration process to achieve minimum damage of the cell. The motor has been tested and is able to perform the partial rotation as intended with a load of 8 N in a frequency of up to 10 Hz.

