

## Biomedical Sensors

The following are application of biomedical sensor in biomedical field;

- i) Continuously monitoring some parameter of biology outside & inside. In biomedical field heart frequency has to be monitored continuously by heart sensor for a few day after operation. In military, some viruser need to be found by biosensor to hold back the attacking from enemy.
- ii) Control. In medicine people usually utilize some parameter detected by biomedical sensor to control or adjust physiological course of body. In the food industry biomedical sensor could be utilized to measure some enzyme & its concentration to control the process of fabrication of food & to analyze the nutritional ingredient of food. In military biomedical sensor can be employed to detect the situation of battle field to adjust the strategy.
- iii) Detecting the information of clinical chemistry. In the field of medical clinic & basic research the biology's information needs to be detected to ensure the present state of human biology. For example, before operating on a patient, a doctor needs to know the body temperature & blood pressure. Under the condition, clinical thermometer & blood sensor has to be employed to help doctor quickly detect body temperature & blood pressure of patient.
- iv) Biomedical sensor such as PH sensor could be also employed to detect atmosphere & condition to improve our living situation.

## Biomedical Actuators

### i) Stepper Motor Actuator

A class of polymers known as the electroactive polymer actuator under the



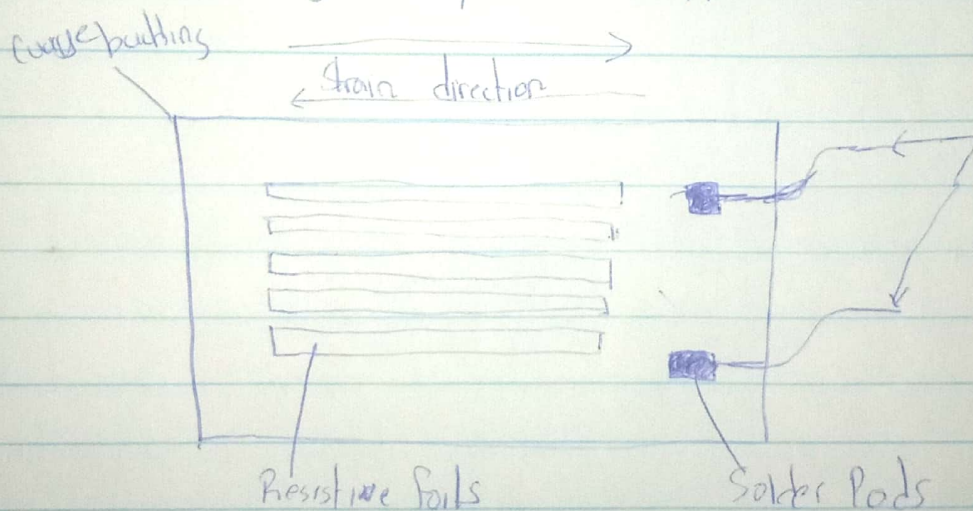
presence of an electric field which can be produced when it undergoes deformation.

## 1) Drug-Delivery Management Using Smart Micropump

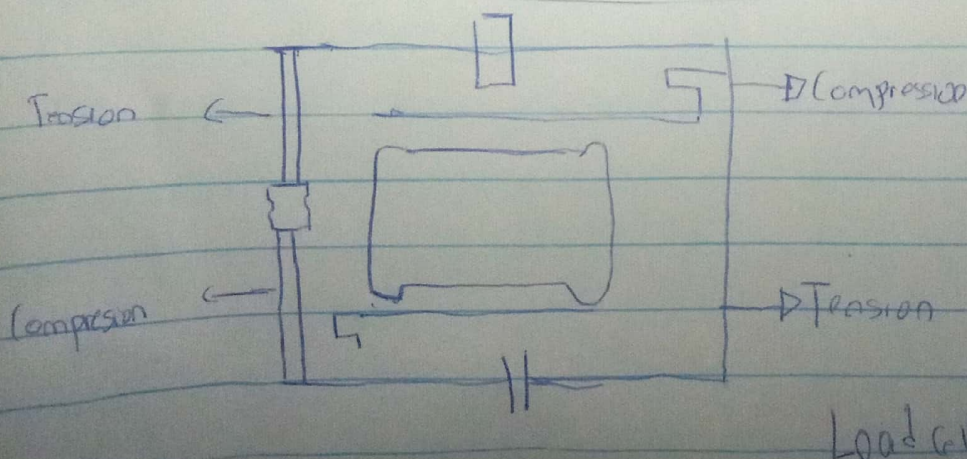
Up until now implantable drug-delivery systems could not control dose, timing or delivery location for the implanted drug. The smart micropump system could change the situation. It integrates a refillable electrolysis micropump with an implant drug reservoir and is capable of making adjustments to the delivery of the implanted drug. The success of this system is only possible through MEMS technology. These pumps can be guided wirelessly & their effectiveness can be monitored with ease.

## 2) Strain Gauges Gauge

They consist of a very fine metallic foil etched in a grid pattern, which is bonded to a device by user to measure the strain or amount of deformation of the device when a weight or pressure is applied.



STRAIN GAUGE





Murphy manufacture load cells that use strain gauges to convert weight into electrical output

2.