Methods of Fabricating Multi-degree of Freedom Shaped Electroactive Polymer Actuators/Sensors for Catheters

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Technology description

Background:
Up until now there has been no good way to make selective electrodes that can be guided in multiple directions. We have created a prototype model of micro catheter with active guide wire which has two bending degrees of freedom. Such electrodes could be useful in the placement of medical devices such as catheters.
Technology:
Researchers at UNR have achieved steerable cylindrical electrodes by interdigitated selective electrodes in the surface of polymers. These selective electrodes can be used to mimic the muscle-like behavior seen in nature. Method of producing these electrodes have also been patented. By using simulators (whose conditions are similar to those of a body cavity), we have also carried out simulation experiments "in vitro". The experimental results indicate that the proposed micro catheter with active guide wire is applicable to intra-cavity operations.

Advantages

The disclosed methods and actuators/sensors produced can be used in various medical devices.
The resulting tube is electrically controllable.
The tube can be guided through the smallest veins.
This results in faster more accurate placement of catheters.

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