MEMS RESEARCH:

Temperature Sensor

Salvador Fco Criado Melero

Francisco Ramón Bernal Herrera

Introduction

We have chosen a non-comercial MEMS wich is just a research project because we considered it really interesting. Furthermore, this device has medical purpose, so we think it can be really interesting in the future.

We are going to discover the fabrication of a MEMS temperature sensor implemented on the capillary suface whose objective is the temepertaure monitoring for tumor tratament.

A technique for a tumor treatment consist in raise the temperature above 42 ºC for a sufficient period of time to kill tumor while preserving normal physiological temperatures in the surrounding tissue. So is very importan to develop a system to get a precisely temperature of the tumor exiting in the human.

The sensor

Here we shows a image of the MEMS system. It consists on a rod with two ends.

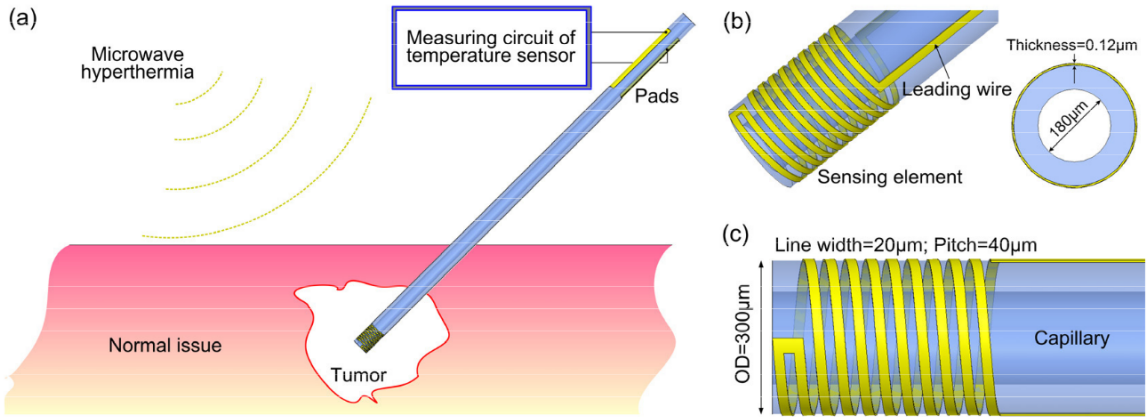

Fig. 1. (a) The designed micro temperature sensor on the capillary surface is used to monitor the temperature during microwave hyperthermia; (b) sensing element configuration in the sensor; (c) main structural parameters of the temperature sensor

One end of the sensor, includes a twelve turns of platinium (Pt) coils as the sensing element of the sensor (figure c). This end is in contact with the tumor.

The other end is formed by two pads connecting to satandard measuring circuit, which can easily and quickly show the measured temperatures (figure a).

References

Fabrication of a MEMS Temperature Sensor on the Capillary Surface for Hyperthermia Intervention Monitoring. Z. Yang, Y. Zhang and T. Itoh.