Carbon Nanotube Sensors for Synthetic Skin

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Abstract

Hello World.

1 Introduction

1.1 Orthotic Rehabilitation

1.2 Carbon Nanotubes

1.3 something something something

2 Method

Device creation is split into subprocesses which are described in more detail below. The basic premise of the device creation is to produce a flexible substrate, deposit contacts onto this substrate, deposit the sensor material onto the substrate, repeat the process, cover one device with a deformable dielectric, sandwich the two layers together and finally encapsulate the device in a protective outer coating.

2.1 Preparation

2.2 Evaporation

2.3 CNT Deposition

2.4 Optional ILL

2.5 Optional RIE

2.6 Dielectric Layer

2.7 Device Encapsulation

3 Results

1. Capacitive sensors for strain and touch applications
   This should show that it is possible to both compress the sensor, that is change the dielectric thickness for a response. It also should show that it is possible to stretch the sensor, both compressing the dielectric thickness and decreasing the plate coverage area. The devices should be able to withstand 200% strain and decent compressive forces.

2. $^{\Omega}/_{\square}$ film characterisation
   This should show that the gauge factor increases as we approach sensor destruction during stretch events. So we have a trade off between a sensor that is reliable and a sensor that provides the performance characteristics required for mobile applications.

3. Overshoot removal and power improvements
   This should show that the capacitive sensors remove overshoot when compared to resistive sensors, and that the dielectric leakage from the devices is much less than the resistive sensors. This will indicate the sensors have improved power consumption performance for mobile applications when compared to the resistive devices

4 Evaluation

4.1 Comparison to objectives for orthotic rehabilitation

5 Conclusion

5.1 Indicative results indicate the potentional for this to be applied to rehabilitation devices