We present high-performance temperature sensors which utilize spray deposited carbon nanotube (CNT) films as the active sensing material. In order to evaluate the device performance, the change in device resistance with respect to the change in temperature is monitored. The performance of devices are compared with and without encapsulation, then for the same devices the effect of post-fabrication treatment order is observed. Next, another set of devices is used to study the effect of encapsulation material curing conditions on device performance. Results show that the fabricated sensors show very good electrical response to the change in temperature. Relative change in resistance as high as 57% for an increase of temperature from 0°C to 80°C can be achieved. Moreover, devices which are first encapsulated and then heat treated exhibit the highest relative change in resistance during measurements. Curing the encapsulation epoxy using visible light instead of ultraviolet light may also result in improved device performance.
thermometers, spray coatings, temperature sensors, carbon nanotube based temperature sensor, device resistance, encapsulation epoxy curing, encapsulation material curing conditions, spray deposited carbon nanotube films, temperature 0 C to 80 C, temperature sensor encapsulation, thermal treatment, visible light curing, Carbon nanotubes, Encapsulation, Performance evaluation, Resistance, Temperature measurement, Temperature sensors


Kongress / Zusatzinformationen: Glasgow UK, 29 June-02 Jul 2015 2015-06

Verlag / Institution: IEEE Xplore Digital Library

Jahr: 2015

Quartal: 2. Quartal

Jahr / Monat: 2015-06

Monat: Jun

Seiten: 212–215

Sprache: en

Volltext / DOI: http://doi.org/10.1109/PRIME.2015.7251372


Occurences: Einrichtungen > Fakultäten > Fakultät für Elektrotechnik und Informationstechnik > Lehrstühle und Professuren > Nanoelektronik (Prof. Becherer komm.) > 2015

Entries: