

Title (en)
PARTICLES FOR DETERMINING THE LOCAL TEMPERATURE

Title (de)
PARTIKEL ZUR ERMITTLUNG DER LOKALEN TEMPERATUR

Title (fr)
PARTICULE POUR DETERMINER UNE TEMPERATURE LOCALE

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Application
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Abstract (en)
[origin: WO2006082226A1] The invention relates to particles for determining the local temperature in organic and non-organic bodies. The temperature is determined using nuclear magnetic resonance spectroscopy (NMR) when said particles are utilized. The aim of the invention is to provide temperature sensors which allow the temperature to be measured in vivo in a contactless manner on a nanometer scale while making it possible to use NMR-active substances which are foreign to the body or are contained therein in small quantities only and can be toxic, said temperature sensors allowing the temperature to be measured in vivo also on materials that are foreign to the body, e.g. nanoparticles that are heated in the body in a certain way. Another aim of the invention is to produce said temperature sensors with defined geometrical dimensions in the nanometer range. Said aims are achieved by means of particles which contain a filling of one or several temperature-sensitive substances in a shell, the temperature of said substances being measurable in vivo using NMR. The shell is composed of one or several carbon nanotubes that are inserted into one another or a fullerene. Elementary metals, paramagnetic substances, materials having a magnetic order, substances having grid effects, molecular systems, and/or heterogeneous systems are selected as temperature-sensitive substances provided that the same have specific physical-chemical properties which are influenced by changes in temperature and the change in the properties of the same can be measured using NMR.

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