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Development of Carbon Nanotube radiation detectors

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Carbon Nanotubes are one-dimensional structures with diameters ranging between 2 and 100 nm and lengths up to hundreds of microns. They are characterized by a large variety of peculiar characteristics such as a semiconductive or metallic behaviour, a ballistic electrical conductivity and enhanced field emission capabilities. Among these characteristics their sensitivity to the radiation is very peculiar depending from their diameter and chirality. The energy gap varies from 0.4 to 6 eV leading to a sensitivity to the electromagnetic radiation, potentially from UV to IR. This opens the possibility to build a wide sensitive range radiation detector for space researches and environmental controls. Main characteristics of Carbon Nanotubes allowing the detection of radiation will be reported together with first results obtained exposing first prototypes to UV, visible and IR radiation.

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