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-Site Silicon Nanowire-Based Radiation Detection Sensor

Silicon nanowires are used for highly sensitive on-site radiation detection sensors. Silicon nanowires are synthesized by utilizing chemical vapor deposition techniques and they are surface modified with boron atoms for radiation detection. The silicon nanowires are approximately 15 micrometers long and 10 nanometers thick using the chemical vapor deposition reactor. The synthesized silicon nanowires have been put on a patterned chip for detecting radiation. The sensor chip is hardwired with lock-in amplifier for on-site detection. The nanowire-based radiation detector could be lower in cost and more sensitive than existing sensing detectors. Nanomaterials could be fabricated to selectively detect specific radiation materials. Surface modified nanowire-based sensors could be used for on-site health and safety monitoring. These sensors would be highly accurate and lower in cost. A machine learning AI software could be used to learn about the environment and predict the outcome of radiation.

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