Development of Nanosensors in Nuclear Technology

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Abstract. Selectivity, sensitivity, and stability (three S parameters) are developed as a new range of sensor this provided instruments for harsh, radioactive waste polluted environment monitoring. Isotope effect is very effective for nuclear radiation sensors preparation.in this presentation are reviewed of the development of Nanosensors in nuclear technology, such as high temperature boron and its compounds with suitable physical and chemical features as sensitive element for temperature and nuclear sensor, Boron isotopes based semiconductor nanosensors and studies of the mechanism of the removal uranium from radioactive wastewater with graphene oxide (GO).

INTRODUCTION

As the theme of this presentation, the words by Richard Feynman: "I will not now discuss how we are going to do it, but only what is possible in principle – in other words, what is possible according to the laws of physics" [1]. Just after Christmas 1959, he delivered a now-famous talk – titled "There's Plenty of Room at the Bottom" – at the California Institute of Technology. It is possible, he proposed, for scientists to assemble new materials at the level of single atoms and molecules, where there are "new kinds of forces and new kinds of possibilities, new kinds of effects". It is generally accepted that Feynman's visionary discussion of the problems and promise of miniaturization constituted the starting point for the new field that today is called *Nanotechnology*.

Nanobiosensors, optical nanosensors and magnetic nanosensors, with many technical details are reviewed by many researchers. Here, we present an overview of all nanosensors, showing similarities and fundamental differences among the various categories. The aim of this review is to provide an overview, which is suitable for beginners to realize the growing importance of this field. Nanosensors are sensing devices with at least one of their sensing dimensions being less than 100 nm. In the field of Nanotechnology, nanosensors are instrumental for (a) monitoring physical and chemical phenomena in regions difficult to reach, (b) detecting biochemicals in cellular organelles and (c) measuring nanoscopic particles in the industry and environment. A search on the terms "nanosensor(s)" and "nano-sensor(s)" appearing in titles of journal papers shows a growing trend in nanosensor research, as evident from the resulting publication record. Needless to say, a far greater number can be expected if a complete keyword search is performed to include all nanosensor publications. The advance in scientific understanding is naturally followed by technological development. Although sensors have a long and illustrious history, the realm of nanosensors is relatively new.

Table 1 refers to the development of various nanosensors. Figure 1 refers to the various nanosensors can be loosely grouped into three broad categories of nanosensors:

- Optical nanosensors
- Electromagnetic nanosensors
- Mechanical and/or vibrational nanosensors.

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