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Editorial

Nanotoxicology: A New Perspective of Environmental Analysis-Ecotoxicology and Biodiversity

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Editorial

Richard P Feynman on December 29, 1959 while addressing his lecture in the annual meeting of the American Physical Society at Caltech on manipulation of atoms as powerful tool in synthetic chemistry research at that time told that "there are plenty of rooms at the bottom". This means there are huge informations hidden at the atomic scale that may have tremendous applications. This quote makes a revolution in the materials science research and leads to the concept of nanotechnology. Materials at the nanoscale exhibit excellent physical, chemical and electronic properties that have found applications in opto- and nano-electronics, sensors, solar-cells, and also in medical science [1-10]. Nano materials based devices are very efficient, having lower power consumptions. Nanoparticles like silver, gold, ZnO, TiO_2 etc are now a day's very commonly used in detergents, toothpastes, sunscreen creams, anti-bacterial pasting, food preservation, and in medicines [11,12]. After use, they directly come in contact with the environment. Moreover, nanoparticles like CdO, CdS, PbS, PbTe etc are produces in the industries and released to the environment. As these nanoparticles have high surface to volume ratio, they can interact widely and in a different manner compared to their bulk counterpart. Usually the nanoparticles used in the daily commodities are not so toxic to the human health but that may be harmful for the other living organisms in soil, air and water. Gold, silver, ZnO exhibit good antibacterial activity against some bacteria like Bacillus subtilis and Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Streptococcus mutans, Vibrio cholerae, Neisseria, Gonorrohea, and Klebsiella pneumonia, fungal pathogens like S. aureus, S. marcescens, P. mirabilis, C. freundii and fungi like A. nidulans, T. harzianum, A. flavus, and R. stolonifer [13,14]. Nanoparticles can easily penetrate the cell membrane of living cells of microorganism and affect their growth, life cycle and stability in nature. This leads to the change in the biodiversity of the soil, air and water [15]. Thus the natural balance may be disrupted at the ground level. Thus toxicological study of nanoparticles has becomes very essential in the present scenario. Numerous and extensive studies have been appeared in recent literature on the toxicological aspects of nanoparticles but still they are not well understood and incomplete. Researchers are also trying to develop new technologies to study the impact of these nanoparticles on the environment and biodiversity.

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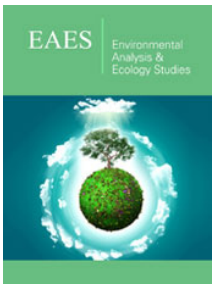

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