The Causal Link between Nano -Toxicology and Human Health: DNA Damage by UV Emission from Nanoparticles

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Abstract

The causal link between nano-toxicology and human health is proposed to be the scrambling of genes in DNA by UV radiation from NPs heated in the gut upon the ingestion of food. NPs stand for nanoparticles. By classical physics, NPs conserve body heat by changing temperature. QM differs as the Planck law requires the NP atoms have vanishing heat capacity thereby precluding any change in temperature. QM stands for quantum mechanics Instead, NPs conserve heat by the emission of EM radiation. For heat capacity to vanish; however, the NP atoms must be placed under nanoscale EM confinement. But NPs having high surface-to-volume ratios confine absorbed body heat almost entirely to their surfaces, the surface heat thereby providing the EM confinement of NP atoms over nanoscale wavelengths. QED then conserves the surface heat by creating EM radiation standing between diametrically opposite NP surfaces, but differs from the complex relativistic QED by Feynman and others. Briefly stated: QED conserves heat supplied to a NP absent heat capacity by creating EM radiation having half-wavelength $\lambda/2 = nd$, where n and d are the refractive index and diameter of the NP. For example, QED induces silver NPs having diameter d = 90 nm and n = 1.35 to emit UVC radiation near λ = 254 nm - a lethal level for DNA damage and if the scrambled genes are not repaired by the immune system may lead to cancer, birth defects, etc. QED does not rely on UV produced by speculative multi - IR photon upconversion as the UVC is directly excited. Figure 1 illustrates the UV emission from a layer of 50 nm silver NPs measured by a UVC light meter. The toxicity of NPs in GM food is briefly discussed. GM stands for genetically modified.

Image

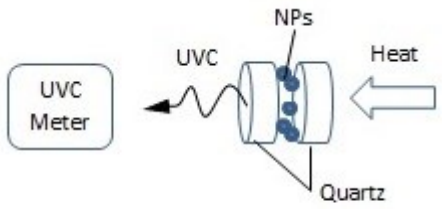

Figure 1: Demonstration of UV emission from Silver NPs

Recent Publications

1. Prevenslik, T (2016) DNA Damage by Nanoparticles, Nazarat-Taleem College, Rabwah, Pakistan, September 26.
2. Prevenslik, T (2016) Cancer caused by UV Radiation in GM Food? Nazarat-Taleem College, Rabwah, Pakistan, September 11.
3. Prevenslik T (2016) Cancer caused by Nanoparticles in GM Food? The 11th Biotech Conference, Berlin, Germany, July 28-29.
4. Prevenslik, T (2014) Class Action Litigation for Skin Cancer by Sunscreens, International Conference on Safe production and use of nanomaterials, Nanosafe, Grenoble, November 18-20 .
5. Prevenslik, T (2010) Nanoparticle Toxicity and Cancer, NanoSafe 10, Minatec, Grenoble, November 16 – 18.
6. Chen, G., et al., (2014) Upconversion Nanoparticles: Design, Nanochemistry, and Applications in Theranostics, Chemical Review, 114(10): 5161–5214, May 28.

Biography

Thomas Prevenslik is a retired American living in Hong Kong and Berlin. Because classical physics does not work at the nanoscale, he developed a theory of QED based on QM. By this theory, heat absorbed by NPs is deposited almost entirely in their surfaces because of high surface-to-volume ratios. NP atoms are therefore placed under high EM confinement over nanoscale wavelengths that by the Planck law of QM precludes the atoms from having the heat capacity to conserve heat by changes in temperature. Instead, the EM confinement converts the surface heat into standing EM radiation inside the NPs, Any NP quantum states having lower transition frequencies than the standing EM radiation frequency are indirectly excited with emission to the surroundings. In the instant topic of nano-toxicology, the emission of standing EM radiation at UV levels damages nearby DNA and by scrambling genes establishes the causal link to diverse human health problems.

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Notes/Comments: