Chem Sci J 2016, 7:2(Suppl)
http://dx.doi.org/10.4172/2150-3494.C1.003

European Chemistry Congress

June 16-18, 2016 Rome, Italy

Gold nanoparticles (GNPs) new synthesis method and modification with novel polyethylene glycol (PEG)-N-acetyl cysteine (NAC) conjugate

Amal Hwaree Ayoub, Maisa Haj Inebtawi and Seba Jawabry Shadafny
Metallo Therapy ltd., Israel

In this paper, we describe a new method to synthesize small gold nanoparticles (average diameter of ~3.5 nm). Our method is based on the use of micro emulsion to mediate the reduction process; the micro emulsion guarantees soft reduction process, uniformity of the produced GNPs as well as it controls particles size and shape. In addition, we introduce a novel polyethylene glycol (PEG)-N-acetyl cysteine (NAC) conjugate (PEG-NAC) for surface modification of the GNPs. The new PEG-NAC conjugate attaches the surface of the gold nanoparticles via the thiol group of the NAC and intended to provide GNPs enhanced solubility and improved stability particularly at protein containing solutions.

amalay@metallo-therapy.com

Schrödinger theory of the electronic structure of matter from a 'Newtonian' perspective

Viraht Sahni
City University of New York, USA

This talk is on a description of the Schrödinger theory of the electronic structure of matter as defined by a system of N electrons in the presence of an arbitrary time-dependent external field $F^{ext}(rt) = -$ nabla v(rt), in terms of a 'Newtonian' perspective. The perspective is based on the 'Quantal Newtonian' second law of motion for each electron. This is a description in terms of 'classical' fields that pervade all space, and whose sources are quantal in that they are expectations of Hermitian operators taken with respect to the system wave function. In analogy to classical physics, there is then in addition to the external field, an internal field, and a field representative of the response of each electron. The internal field is a sum of fields representative of electron correlations due to the Pauli Exclusion Principle and Coulomb repulsion, the density, and kinetic effects. The perspective leads to an understanding of the intrinsic self-consistent nature of the Schrödinger equation. On summing the law over all electrons, each component of the internal field vanishes (as is the case in classical physics), thereby leading to Ehrenfest's theorem. The 'Quantal Newtonian' first law, a special case, is in turn descriptive of stationary state Schrödinger theory. The individual electron perspective will be explicated for both a ground and excited state via an exactly solvable interacting model system. This interpretation of Schrödinger theory constitutes the basis for Quantal Density Functional Theory, and leads to insights into traditional Density Functional Theory and Quantum Fluid Dynamics.

VSAHNI@brooklyn.cuny.edu

Notes: