Some reflections on nano-materials

In an address in a workshop on the preparation and characterization of nano materials the following points have been raised and they are kept as record for the future generations. The questions raised are:

(1) The fundamental understanding of nano materials is not yet sound since we have not yet evolved an equation of state which can be employed to understand and also predict the behaviour of these materials. Is there any other possibility to formulate an equation of state?

(2) For example if you take a compound their absorption spectrum follows well governed selection rules. For example if the molecule contains a hydroxyl group or any other functional groups one can safely predict in which wave length or frequency or wave number one can observe the optical spectra both electronic and vibrational spectra. The spectral data are not dependent on the state size shape of the system. But in the case of nano materials the surface plasmon resonance is dependent on the shape size and many other parameters this means that the governing principles of scientific documentation have to take an alternate methodology for nano materials. On this aspect we have already posted one or two presentations in this site.

(3) It has been pointed out that one dimensional nano materials are or may become important since vectorial transfer of charge is possible. The one dimension growth is similar to natural process like the growth of a human being or growth of a plant and so on and hence one dimensional nano materials may be the appropriate ones to mimic biological systems. Since one dimensional systems can bend and fold it may mimic the natural systems in all the reactivity. May be one has to delve upon this aspect more clearly with appropriate examples in the future.