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Viscosity and zeta potential measurement of double walled carbon nano-tube dispersion by hydro phobically functionalized biopolymer

Skender
Université Yahia Fares De Médéa, Algeria

Achieving stable suspensions of carbon nanotubes (CNTs) is still a challenge; pristine CNTs have limited solubility in either organic solvents or water due to their hydrophobicity and strong inter tube Vander Waals forces. Thus, a lot of efforts have been devoted over the years to prepare stable dispersion. Therefore, a non covalent approach has the advantage of no disruption of the structure and the properties of the native tubes, which is realized by adding surfactants as it allows keeping intact the intrinsic properties of the CNTs. However, for different applications, the potential toxicity of the surfactant is an important issue. Polysaccharides are among the best candidates and chemical modification can improve their intrinsic features. Therefore, bioengineering technology has likewise become increasingly sophisticated with the result using numerous chemical derivatives of commercial polysaccharides and many of the untreated polymers themselves, showing remarkable and sometimes unique properties as thickening, stabilizing, gelling and emulsifying agents. Hence, among the family of water-soluble polysaccharide the xanthan gum, the physical properties of this polysaccharide is correspondingly subject to less than normal variations and certain bacterial polysaccharides, chemical modification can change the character of the polysaccharide yielding therefore, to a new properties. The dispersion and the stability against sedimentation of double walled carbon nanotubes (DWCNTs) have been investigated (rheological properties, Zeta potential) as a function of pH and Xanthan gum concentration. Our results show that stable suspension of DWCNTs for 0.5% (w/w) of functionalized Xanthan gum could be obtained.

skender_ab@yahoo.com

Some theoretical prequels for the full system for multipurpose biomaterials activation method and artificial biomatrix materials synthesis

Elena V Orlova
Institute of Theoretical and Experimental Biophysics, Russia

This invention is the full system (the method and technique) for biomaterials activation and long-time storage and cryopreservation by means of artificial biomatrix nano gels. Here some specific aspects of cooperative Jahn-Teller effect for complicated molecules and structure to function priorities are presented. This is core of activation biomaterials by weak low frequency magnetic field for many branches of biotechnology and medicine. This method is a tool for activation for fast growth and reproduction of stem cells without any cancer transformations with de novo expression of mRNA MDR gene, decreased apoptotic effects and in the required amount which could be the important application in cancer therapy. But in other hand it also could be the way for the biofuel production from microalgae *Chlorella vulgaris*. The main feature of gels for cultivation, cryopreservation and long-time storage is their ability to heal itself monolithic structure after splitting it into separate pieces. With this method of cultivating a balance is achieved by the number of ways and hydrophobic contacts between the extra-cellular matrix which includes gel and also a cell backing which ensures uniform growth of the cell monolayer.

eaglson@mail.ru