**HYBRID ORGANIC-INORGANIC NANOPARTICLES FOR AQUACULTURE COATINGS HYDROPHILICITY/HYDROPHOBICITY TUNING**

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**ΠΕΡΙΛΗΨΗ**

We report herein the synthesis and characterization of organic-inorganic hybrid nanoparticles. Silica / polyethyleneimine (PEI) nanoparticles were prepared through a silicification progress, forming hydrophilic nanospheres. An increase of the hydrophobicity of these materials is achieved through alkylation of PEI, by reacting the amino end groups of the Silica / PEI with octadecyl isocyanate (ODI). Also, hydrophobic nanoparticles were formed through alkylation of PEI dendrimers using ODI in various PEI/ODI ratios. Silicifcation of these nanocomposites using sililic acid increased the amphiphilicity and improved their dispersion in water. FT-IR spectroscopy and thermogravimetric analysis (TGA) confirmed the successful synthesis of the nanoparticles and scanning electron microscope (SEM) was used to confirm the size and structure of the resulting nanomaterials. The hydrophilic/hydrophobic character of the nanoparticles was investigated by contact angle measurements. Biological evaluation of the synthesized materials was performed in vitro by using MTT and wound healing assays in healthy human cell lines. According to our results no toxicity was observed.

**ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ:** nanoparticles, surface energy, coatings, hydrophilic/hydrophobic, aquaculture.