The development in the field of materials science related to the nantechnology achievements is strongly connected to the development in medicine. Currently, almost all of the domains of medicine use nanotechnological materials solutions for the new generation of therapy and diagnostics. One of the materials, from which medicine has high hopes, are carbon nanotubes. They have become candidates for preparation of drug or gene delivery systems, for cancer therapy using hyperthermia phenomena. They also turn out to be biomimetic and desirable for the construction of materials applied in tissue regeneration. Biosensors and electrodes for neural system stimulation are made based on carbon nanotubes. However, the issue of the toxicity of nanotubes arouses controversy, despite a large number of studies. It is known that some of the groups of nanotubes, especially of the high degree of order, not subjected to the process of surface functionalization and released to the human body in an uncontrolled way, might be dangerous to the health. According to our experience, we believe that the obtainment of various nanocomposite materials basing on carbon nanotubes is a safe path, allowing their use, especially in medical applications. We plan to conduct the study on the system containing two starting phases, namely carbon nanotube and organosilicon polymer, and, basing on them, obtain nanocomposite layer (CNT/organosilicon polymer) on the metallic surface. Such a form of the material is, on the one hand, very close to the specific applications (coating on the metallic implants for bone surgery and dentistry) and, on the other hand, it is the form very useful for performing an elemental examination in the field of chemical, physical and biological properties. It is known that polymeric materials merged with carbon nanotubes gain a number of properties as a result of the presence of the nanophase (mechanical, electrical, thermal properties, nanotopography, etc.). Moreover, coating nanotubes by the polymeric layer causes, so to say, their capturing in the polymer and there is no longer a threat of uncontrolled release of them to the surrounding environment. The CNT/organosilicon polymer system is a very perspective solution not only for medicine. On this way, it is possible to obtain materials withther barrier properties, self-cleaning, piezoelectric layers of the nanotopography generated by the presence of nanotubes. Features of such laminar systems depend on the interactions in the CNT/polymer interface. Their character determines parameters of the obtained layer. Therefore, it is possible to affect properties of the designed materials in a controlled way by the selection of the proper kind of nanotube and by modification of the polymer structure. As it is known, organosilicon polymers are ceramic precursors. By thermal treatment of the CNT/polymer system, it will be possible to determine the influence of the nanotubes on the phase composition and properties of the ceramic layer. The objective of the study we would like to perform in the scientific project will be two kinds of nanocomposite layer: polymeric and ceramic, both containing carbon nanotubes. The examination we plan to realise will cover in the first place structure of the material, its phase composition, analysis of interactions metal/coating, polymer/nanotube and ceramic phase/nanotube. The results will be correlated with nanoindentation and the adhesiveness of the layers, electric properties as well as topography and chemistry of the surface. Divers in terms of chemical structure, micro- and nanotopography layers will be evaluated from the point of view biological properties in *in vitro* conditions in the contact with cells and simulated body fluids. The knowledge, which results from the examination performed by us, might be used not only in the field of medical applications but also in many other domains related to the multifunctional coatings on metals.