

# CNT-based bio-compatible matrix for neural culture growth

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Conjugation of biological systems and electronic systems of information processing and transmission is essential for the creation of hybrid nanoelectronic devices, including biosensors. One of the possible interface components are carbon nanotubes (CNT), demonstrating a high biocompatibility, chemical stability and unique electrical properties [1, 2]. This work aims at exploring CVD-grown CNT films, and clarification of the influence of the synthesis parameters of CNTs on the viability and proliferative activity of the nerve cells grown. Thin CNT films were fabricated by chemical vapor deposition (CVD) technique on silicon oxidized wafers and quartz substrates.

The nerve cells were grown on the obtained CNT-films. Viability and proliferative activity of the cells grown, have been studied by MTT method and via visualizing the cultures by optical and electron microscopy. Possible toxic effect of the used catalyst on the cells is also discussed. The results show that the use of CNTs hardly reduces the viability and proliferative activity of cells and don't affect the cell morphology. That means no toxic effect of carbon nanotubes on nerve cells, which, combined with good electrical conductivity of CNTs makes these hybrid systems a promising material for biosensors.

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[2] E. Olakowska, I. Woszczycka-Korczyńska, H. Jędrzejowska-Szypułka, J. Lewin-Kowalik, Folia Neuropathol 48 (2010), 231-237.