



TITLE: The Interface Nerve Tissue-Silicon Nanowire for Regeneration of Injured Nerve and Creation of Bio-Electronic Device

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ABSTRACT (upto 300 words)

In terms of computing speed, modern computers significantly exceed human capabilities. However, needs to expand computers intellectual capabilities require significant increase energy consumption. On the other hand, the human brain, which performs a huge amount of work on physical and intellectual interaction with the environment and ensures the coordinated work of the human organism as a whole, is characterized by extremely low energy costs. Therefore, the idea arose of creating a hybrid brain that physically unites the neural networks of the human brain with modern computing devices. The end product of the device, unlike traditional computers, can use both logical and associative methods for solving problems. The main task of the hybrid brain is to provide monitoring the state of the body as a whole and to correct the work of those organs that have deviations from the norm. Despite numerous experiments to create hybrid brain, one of the main obstacles remains to form a bio-electronic interface that preserve the vitality of the nervous tissue and do not affect negatively electronic part for a long operation time.

BIOGRAPHY (upto 200 words)

Klimovskaya A.I. after graduating from I. Franko State University entered the postgraduate program from the Institute of Semiconductors of NAS of Ukraine, where in 1972 defended candidate's thesis, in 1986 - doctoral thesis and headed Laboratory of Dimensional Phenomena in Semiconductors and Devises on their Basis. The most significant fundamental achievements and practical realizations are:

1. For the first time experimentally discovered: dimensional phenomena in silicon; cooling of hot electrons; negative magneto-resistance in quantized near-surface silicon layers; Dicke effect in quantum hetero-structures; a new type of electrical instabilities -- surface recombination waves.
2. A technology for regeneration of injured neurons and for bioelectronics device formation has been developed.

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