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**Neuroelectronic device based on nanocoax arrays** JEFFREY R. NAUGHTON, JACLYN N. LUNDBERG, JUAN A. VARELA, MICHAEL J. BURNS, THOMAS C. CHILES, JOHN P. CHRISTIANSON, MICHAEL J. NAUGHTON, Boston College — We report on development of a nanocoax-based neuroelectronic array. The device has been used in real time to noninvasively couple to a ganglion sac located along the main nerve cord of the leech *Hirudo medicinalis*. This allowed for extracellular recording of synaptic activity in the form of spontaneous synapse firing in pre- and post-synaptic somata, with the next target being recording of local field potentials from rat hippocampal cells. We also discuss an alteration of the architecture to facilitate optical integration of the nanoarray, toward utilizing the so-modified device to elicit / inhibit action potentials in optogenetically-modified cells.

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