Implantable neurostimulation devices generate electrical stimulation to treat various disorders involving neurological problems. A neurostimulator is composed of a connector assembly which connects to the leads, thin wires that deliver electrical pulses from the neurostimulator. There currently are a number of neurostimulators treating a wide range of disorders including migraines, back pain, hearing loss, and Parkinson’s disease. These devices are hard-wired to the leads and have a limited number of electrodes. The permanent attachment of the leads to the neurostimulator means that failure from either component will result in removal of the entire device as opposed to a simple disconnection and replacement of one component with the use of a connector. The leads must be hardwired because there is no connector commercially available.

Neurostimulators currently have up to 16 electrodes. While they may be effective in treating certain disorders, neurostimulators are inadequate to work with neural prostheses being developed as well as the treatment of more advanced neurological disorders such as Alzheimer’s. The objective of this project is to develop a hermetic, 32 channel, implantable microconnector that is compatible for neurostimulator devices in the market. The connector is made with High Temperature Co-fired Ceramic (HTCC), a common material used in microelectronics along with titanium and platinum. The dimensions of the initial prototype are 5mm by 4mm by 3mm. Overall, this electronic packaging will provide an easier way to assemble the neurostimulator in addition to improving neural feedback. Upon successful completion of our project, we wish to present our findings at the 10X Medical Device Conference in Minneapolis in May 2014.