Insulating Coatings for Implant Devices & Ribbon Cables

Grant R44NS41113 | Period of support: 09/2006 – 03/2010

Challenge/Problem:

Develop ultra-flexible micro-electrode arrays with integrated cable and interconnects to surface-mounted electronics as neural interface for retinal prosthesis. Improve long-term in-vivo stability and biocompatibility under stimulating pulsed conditions.

Current/Near Term Products:

Retinal Prosthesis consisting of wide-field stimulating electrode array for generating central and peripheral vision and high density interconnects to hermetically sealed implantable stimulator electronics.

Approach:

Embed and integrate stimulating microelectrode arrays, interconnecting leads and circuitry traces on a single flexible polyimide substrate. To achieve long term in-vivo stability we are using our proprietary A-Coat encapsulation technology for flex substrates with our novel metal-to-flex substrate adhesion technology.

Future Plans:

Further develop our novel chip-to-flex substrate assembly technique with high-density interconnects. The goal is to reduce the size of the stimulator implant device substantially and improve the connectivity between flex substrate, electronic chip and stimulating microelectrode arrays.

Business Name and Point of Contact:

Dr. Helmut Eckhardt
Premitec, Inc.
920 Main Campus Drive, STE 101
Raleigh, NC 27606

Collaboration/Partnering Opportunities:

We are interested to collaborate with academic groups and companies to expand our neural interface and chip-in-flex technology to other neurotechnology areas.

Keywords: neural interface, ultra-flexible microelectrode array, chip-in-flex, retinal prosthesis