

Gemstone – A Networkable Implantable Wireless Neurostimulator

Speaker: Carlos A. Segura¹, Jake G. Hellman¹, John R. Burns IV¹, Alejandro J. Miranda¹, Elliot Greenwald¹, Andrew Czarnecki¹, Tirunelveli S. Sriram¹, Matthew Muresan¹, Brian Nugent¹, Dan Guyon¹, Wes Uy¹, Edward Keefer², Johnathan Cheng², Steve Tillery³, Caroline K. Bjune¹, John R. Lachapelle¹, and Jesse Wheeler¹ - ¹Draper, Cambridge, MA 02139, ²Nerves Incorporated, Dallas, TX 75214, ³Arizona State University, Tempe, AZ

E-Mail: Csegura@draper.com

Abstract

The neurostimulator arena is one that continues to grow and expand in capabilities as researchers and scientists find more uses and applications to deliver therapies for various conditions. As Draper attempts to jump ahead of the neurostimulators game, we've created the Gemstone – a wireless networkable implant that is not only capable of stimulation but also neural recording in all its 32 channels and contained in a volume less than 2.3cm³. This talk will discuss the current state of the art of neurostimulators and compare the features of commercially available devices against Draper's Gemstones. The Gemstone will be described in detail from the microelectronics and packaging perspective along with the challenges and features that allows the Gemstone to potentially become the most advanced and flexible device of its kind to date.