SMST 2015 – Plenary Presentation
Corrosion and Biological Response
Speaker: Christine Trepanier, NDC

Bio
As NDC’s Senior Director of Process Engineering, Christine manages an expansive team that ensures robust manufacturing processes are in place for new and existing customer programs. With twenty years of experience working with process development and corrosion behavior of Nitinol implants, Christine is recognized by the industry and by the FDA as an expert in the field of surface engineering and corrosion of Nitinol. Christine chaired the group that published ASTM F2129, which outlines the procedure of conducting cyclic potentiodynamic polarization corrosion tests on small medical devices, has published multiple papers and has presented at a various conferences. Christine joined NDC/Johnson & Johnson in 1997 to work on the process development and testing of Cordis SMART® stent products. Christine holds a B.S. in Materials Engineering and a M.S. in Bioengineering from École Polytechnique of Montreal.

Abstract
Corrosion of implantable medical devices can have deleterious effects on the device performance or may result in the release of corrosion products with harmful biological consequences. Therefore, it is critical to determine and optimize the corrosion behavior of medical devices during the development phase of medical devices. Moreover, the forming and finishing steps used to create an implantable device have significant effects on the corrosion resistance of the material. Several studies have shown the importance of passivation process to improve the corrosion resistance and biocompatibility of Nitinol devices. These processes dissolve the nickel-rich phase formed from thermally oxidized Nitinol and promote the formation of a uniform and protective titanium oxide layer that provides Nitinol with good corrosion resistance. The purpose of this presentation is to review studies performed to characterize the surface properties of Nitinol and the impact on the corrosion behavior of the material.