**Applications of Plasma Technology to Surface Engineering of Biomaterials**

A. Sarkissian, S. Assadollahi, C. Côté, M. Patterson, R. Porter, *Plasmionique Inc, Varennes, QC, Canada*

P. Chevallier, C.Paternoster, S. Gambaro, D. Mantovani, *CHUL, Université Laval, Québec City, QC Canada*

Variety of organic, inorganic and composite materials are fair candidates as biocompatible materials. However, their ability to fulfill all requirements of a medical implant is rare. Advanced surface engineering techniques (ASET) are the most important tools for designing high quality medical implants or implantable devices. The ASET could take various forms, including deposition of thin film coatings using different techniques, or near surface implantation of specific atoms (doping) to form a composite layer that is only several monolayers thick, or functionalizing the surface for grafting some functional molecules.

Amongst various strategies using ASET, plasma-based techniques offer the most versatile approach for Biomaterials, since they allow control with a level of precision that approaches monolayer accuracy. Other advantages include their ability to allow independent control of thermal loading on heat sensitive materials. An important group of heat sensitive biomaterials are polymers, which could be synthesized using continuous or pulsed plasma assisted techniques. The ON/OFF modulation time of plasma could be used as a strategy to synthesize polymers with different characteristics.

In this presentation we will give a brief highlight of the technologies that are readily available for application to surface engineering of biomaterials and we will present some examples of their applications.