

Surface plasma modification to improve materials biocompatibility: on the importance of characterizing the plasma process and the surface chemistry.



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This lecture will present plasma-based surface modification strategies that were developed in our laboratory to promote synthetic materials biocompatibility. Such surface modification strategies require the knowledge of both the gaseous plasma physicochemical characteristics and plasma-modified surface chemistries. On one hand, far infrared emission spectroscopy results will be presented. It will be shown that such measurements allowed probing the energy and concentration of species formed in N_2 and $N_2 + H_2$ plasmas. Preliminary data on FTIR absorption spectroscopy in atmospheric plasmas will also be presented with a particular focus made on the possibility of spatially monitoring gaseous molecules consumption during the plasma process. On the other hand, surface characterization made on plasma-treated materials will also be presented with an emphasis made on the effect of the polymer forming process on plasma-induced surface damages. Examples will be provided by comparing both PET flat surfaces and nanofibers that are used to promote cell adhesion.