

**Speaker: Professor Jean Claude Labbe**

**Title: Science of Ceramic Materials and Surface Treatment Processes**

Professor Jean Claude Labbe in this talk describes the research strategy and working of Research Groups at the “Laboratory of Ceramic Processing and Surface Treatments (SPCTS). He then elaborates the topics for each group and its performance over the years. The three main research areas are Ceramic Processes, Surface Treatment Processes and Multiscale Structural Organization of Materials. Within these areas, research groups are further working on Synthesis of Ceramic Powders, Characterization of these Powders, Sintering and Forming of Ceramics, Structural Characteristics and Design of new Ceramics. Prof. Labbe discusses the synthesis of Apatite powders from their precursors. These powders have tremendous biological applications. There are several routes available for synthesis. One possible route is through the formation of a Sol and converting this Sol into a Gel (called as Sol-Gel process). Then he discusses Ceramic forming, the Sintering which is the most important formig process in Ceramics. Stereo lithography is used to elaborate ceramic parts due to its fairly fast processing speed and high precision, dimensional accuracy is assured through attainment of high temperatures very close to surface layers. Professor Labbe also exposes the work done at the laboratory on nano wires and nano composites. High vacuum operations such as PVD, CVD and PECVD are discussed in details with their advantages and limitations. In the last part of his talk he discusses surface modeling of deposited coatings on highly polished surfaces.