

## **Progress in Surface Characterization of Nb/Cu 6GHz seamless cavities**

Although in past two decades there has been a steady improvement in tuning the kinetic energy of incoming material onto the substrate which has led to synthesising SRF thin film with reproducible higher Q-factor than bulk Nb, there has not been much of success in solving the Q-slope problem which limits the use SRF thin film at high acceleration fields. In order to understand the origin of the Q-slope in thin film SRF, it is evident that one has to perform a complete set of surface and bulk analysis in terms of microstructure, residual stress, hardness, substrate / thin film interface adhesion and nature and level impurity of both the deposited thin film and the substrate.

We report on the progress of collaborative study between CERN-INFN and STFC to reduce the effect of Q-slope by controlling all aspect of manufacturing from production of cavity to film deposition.