Novel superconducting materials for RF cavities

Project code	67
Supervisor	Guillaume Rosaz
Department	TE

Title

Novel superconducting materials for RF cavities

Description

The Surface Coatings and Chemistry section (SCC) of the Vacuum, Surfaces and Coatings (TE-VSC) group is taking care of the surface and chemical analyses, thin film coatings by PVD and surface finishing as a CERN-wide support in development and operation of accelerators. The task will be to develop thin films of the suitable crystallographic and superconducting phase (so-called A15) to be used in the accelerating radio-frequency (RF) cavities of particle accelerators. In addition the work will include the optimization of the coating parameters to obtain thin films at high critical temperature and low surface resistivity. Organisation/participation to the characterization by X-ray Diffraction (XRD), to the measurement of critical temperature and RF performance will be encouraged.

Functions and Training Value

Learn how to produce thin films of superconducting compounds by magnetron sputtering deposition first on a small substrate for characterization and later on larger substrates for radio-frequency testing. Support the physicist in charge of the project, structure the results for publications and presentations, interact with the team of technicians of the section and beyond.

Qualifications/Skills

Material scientist or Physicist with academic level (MSc or PhD)