ECR: FROM SAMPLES TO CAVITIES *

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With the development of energetic vacuum deposition techniques, high quality Nb films have been produced supporting the promise of high RF performance. In energetic condensation, the controlled incoming ion energy enables a number of processes such as desorption of adsorbed species, enhanced mobility of surface atoms and sub-implantation of impinging ions, thus producing improved film structures at lower process temperatures. Significant progress has been made in recent years in using ion energy and thermal energy provided during growth to influence the nucleation, structure and material quality of Nb films. By decoupling the film-substrate interface, nucleation and subsequent growth, one can create a favorable template for optimising the final surface exposed to SRF fields. Films deposited by ECR (electron cyclotron resonance) plasma show promise in improved superconducting and RF behavior compared to magnetron sputtered Nb films. This contribution presents the ongoing efforts to further optimize ECR Nb/Cu films and to transition from flat surfaces to tri-dimensional structures.

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