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Hollow cathode discharge for the deposition of amorphous carbon thin films.

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Amorphous carbon thin films with a low Secondary Electron Yield, (SEY), of about 1 can be obtained by sputtering from graphite targets. These coatings have proven to mitigate electron multipacting in particle accelerators and their usefulness depends on the practical applicability to the inner surfaces of the beam pipes. In this contribution we present the development of the sputtering technology, based on the hollow cathode effect, to coat the vacuum chambers of the magnets of the CERN Super Proton Synchrotron "in-situ"(without removing the magnets from their position in the accelerator ring). The glow discharge is characterised by the impedance at different pressures and for different gases (Ar and Ne). The flux and energy distribution function of the ions bombarding the substrate are measured with a retarding field energy analyser. Film thickness and morphology are assessed by scanning electron microscopy and the SEY is measured in an in-house built setup. The optimisation of the coating parameters is discussed.

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