

Advancements in low secondary electron yield carbon coatings for electron cloud mitigation

We report on the progress of carbon coating for multipacting mitigation on SRF-Guns. The findings comprise valuable information for e.g. high-energy charged particle accelerators where the beam-induced electron multiplication leads to electron cloud build up on the beam path. Reports have shown secondary electron yields (SEY or δ) of carbon coatings of less than 1 which is sufficient for most of the applications. Here we show carbon coatings displaying different morphologies leading to SEYs of $0.6 < \delta \leq 1$. One of the vital requirements in accelerator systems is the elimination of possible contamination by delamination of the coating. To investigate the adhesion scratch tests have been carried out and a method to significantly improve the adhesion of carbon coatings on metal surfaces by a titanium interlayer is shown.

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