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NEG Coatings and laser surface engineering (LASE) electron cloud mitigation techniques

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Non-evaporable getter coating of vacuum chamber of particle accelerators was invented approximately 20 year ago by C. Benvenuti at CERN. This technology have already demonstrated its benefits an many machines: ESRF, Elettra, Diamond, Soleil, LHC, MAX-IV, etc. The NEG coatings are very effective vacuum solution, the UHV/XHV conditions could be reached in fully coated vacuum chamber of particle accelerator with much less effort and costs comparing to conventional technology, this only requires a 24-h bakeout to 150 °C and small UHV pumps for hydro carbonates and noble gases. Furthermore, NEG coating can also provide low SEY ($\delta_{max} \sim 1$) to mitigate the electron cloud and the beam induced multipacting problems. Surface resistance of NEG coating could be varied in wide rage with NEG morphology and chemical composition. Thus, NEG coating provides a complex solution for a few problems.

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