

The Irradiation Study of Multilayer Carbon Stripper Foils by Ar Beam

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Irradiation performance of multilayer HBC foils which layers are more than 20 were observed for the first time, and different types of carbon stripper foils were irradiated under a series of irradiation conditions (intensities, fluences) systematically. 8 types of carbon stripper foils were irradiated by Ar beam under different intensities and fluences. 100 layers HBC foil performed best among all the tested foils upon irradiation, which is believed to be due to their structural stability. Multilayer foils performed generally better than the monolayer ones. The existence of boron layer helped to increase the resistance of the foils to irradiation damage, elongating their lifetimes. The swelling of the irradiated DLC type 1 foil and 100 layers HBC foil are measured by alpha particle test. The 100 layers HBC foils is relatively stable in size upon irradiation, while the swelling as well as degree of inhomogeneity of DLC foils decrease with the increasing of fluence at 1.4 μAe intensity, providing the evidence to the structural stability of 100 layers HBC foils.

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