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Development of DLC cone for fast ignition experiment¹ MAYUKO KOGA, TAKUMA ONO, TAKUMA TOKUNAGA, University of Hyogo, HAYATO KADOTA, TAKASHI HASHIMOTO, Osaka University, KAZUHIRO KANDA, University of Hyogo, TAKAYOSHI NORIMATSU, Osaka University — In fast ignition research, a divergence of laser-generated hot electrons is a serious problem. Using DLC cones is one of actions against this problem. However, it is difficult to make a stand alone DLC cone because it needs a thick DLC layer. In this research, we studied preparation conditions for thick DLC layers and characteristics of DLC layers. We prepared a DLC layer on a brass conical bar by using a plasma-based ion implantation and deposition (PBIID) system. Acetylene gas or toluene vapor was used as a source. It was found that low gas pressure and low RF pulse power is suitable for thick DLC layer deposition. It was found that the toluene vapor had an advantage in thick layer deposition because of its high deposition rate. These DLC layers showed SP3 rich property in Near edge X-ray absorption fine structures (NEXAFS) spectra. Based on these results, we succeeded in making stand alone DLC cones.

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