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Research on Measurement Method of the CSNS DLC Foil's Thickness

China Spallation Neutron Source(CSNS) use the diamond like carbon foils (DLC) in the stripping foil system. The foil's thickness is between $100\mu\text{g}/\text{cm}^2$ and $200\mu\text{g}/\text{cm}^2$. With the characteristics of brittle, thin and opaque of the CSNS foils, it is very difficult to measure the thickness. The thickness of the foil has an important effect on the stripping efficient and beam losses. This paper focuses on the study of the stripping foil measurement methods , and according to the characteristics of the CSNS foils, by optimizing the equal thickness interference method , this paper proposed a method for CSNS foil thickness measurement based on the equal thickness interference method of opaque foil without basement, and discuss the measurement principle and measurement error. This research will laid the foundation for further study of the CSNS stripping foil.

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