

Fabrication of Isotopic and Natural Carbon Foils by Thermal Cracking Method and some Issues

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Abstract

Isotopic and natural carbon foils made by thermal cracking method have been using well for nuclear physics experiments so far.

For this purpose, an apparatus with oil free vacuum pumping system was constructed to produce natural and isotopic carbon foils by thermal cracking method onto resistively heated tantalum filament. Characteristic foil properties of such accessible thickness and area in size, uniformity, purity and yield in the foil preparation were investigated. We also investigated the following issue during foil preparing process; when tantalum filament temperature was decreased after cracking, the cracked layer was broken into pieces from the filament sometimes. Through such investigations, we could successfully fabricate 0.2 mg/cm² thin foils to 5 mg/cm² thick foils with dimensions of 20 mm x 20 mm or even larger.