

Search for the ideal cyclotron stripper foil

John O. Stoner, Jr.

ACF-Metals, The Arizona Carbon Foil Co., Inc.
2239 E. Kleindale Road
Tucson, Arizona 85719-2440 U.S.A.
<metalfoil@cox.net>

Although carbon stripper foils can now be obtained in any thickness desired by the cyclotron user, it is still necessary to replace foils occasionally because of their finite lifetimes. Limits on lifetime occur because of poor mounting, vacuum disasters, mechanical shock, nuclear collisions (causing violent atomic displacements), thickening, nuclear and electronic heating with resulting evaporation and diffusion, erosion by residual gas, and many other effects. Beam currents are increasing steadily; this trend is expected to continue. Most problems are accentuated at higher beam currents. ACF-Metals is searching through foil compositions, allotropes and mounting methods to identify promising routes to obtaining longer-lasting foils.