

# Thermal Analysis Modeling of High Current Solid Target for Radioisotope Production

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The large-scale production of various radioisotopes is usually carried with a disk type target system in which solid target materials are located in stack with a forced water-cooling. Although the production yields of radioisotopes can be enhanced by employing high current of proton beam, the maximum beam powers (beam energy multiply by beam currents) deposited on targets is limited by the thermal characteristics of target materials, which are associated with the loss of the target materials due to high temperature above melting points. In this work, a computer program is applied to estimate the thermal transfer in solid targets during beam irradiation. A detailed thermal analysis of such a solid target system under different bombardment conditions is made by means of a finite element analysis method. Results of a parameter study will be presented and discussed with the objective of maximizing beam current limit of the solid target design employed 100 MeV proton beam.