AbstractID: 12838 Title: Monte Carlo Optimisation Of A BNCT Facility Including Multiplier, Reflector, Filter And Modrator For D-T Source

Purpose : Boron neutron capture therapy (BNCT) is currently an outstanding treatment for patients afflicted by deadly brain cancer (GlioBlastoma Multiforme) or Melanoma. Epithermal neutrons with energy from 1 eV to 10 keV represent the most effective range for brain tumor therapy. **Method and Materials** :In this study we have focused on D-T generator as a neutron source. The Monte Carlo code (MCNP4C) has been used in simulation of producing system of epithermal neutrons. For this purpose, we have studied four different neutron multipliers (Pb,U,Bi and Be) and their combinations , six different neutron moderators (H_2O, D_2O ,AlF3, Polystyrene , Plexiglas , and paraffin) five filters (Al , Fe ,S ,Ni , and liquid Argon) and Beo as a reflector. **Results :**Results show that, by selecting Bi and ^{238}U as neutron multipliers, AlF_3 as a moderator and Ni and BeO as a filter and reflector respectively . **Conclusions :** By this results , the optimum epithermal neutron in such system is obtained.