## On the feasibility of Boron Neutron Capture Enhanced Photon Therapy (BNCEPT)

## Abstract:

To investigate the possibility of using the boron neutron capture reaction for dose enhancement in routine photon therapy, calculations based on already published neutron spectra of linear accelerators have been made for different boron concentrations in the tumor. It is found that assuming 1/10 of the fast neutrons produced are thermalized by the time they reach the tumor, then a dose rate of 0.21cGy/s can be achieved for a 50 ppm boron-10 concentration. Considering an RBE of 3 for the boron neutron capture reaction, this translates into 100 cGy RBE-dose enhancement in 2.68 minutes for a 200 cGy prescription. Therefore, it is possible to conclude that boron neutron capture enhanced photon therapy may be a feasible radiotherapy modality.