

Abstract

The 2 MV 6SDH-2 Pelletron tandem accelerator installed at CASP, GCU uses electrostatic fields to propel charged particles or ions to high speeds and keep them in well-defined paths in the form of beams. The magnetic quadrupole lens and magnetic steerer has been employed in the post acceleration of pelletron to focus and correct the deflection of high-energy particle beams from the exit of the pelletron or tank of the accelerator respectively. Then the ion beams with the desired mass, energy and charge state are directed to the pre-selected beam line in the experimental target with the help of the switching magnet. The voltages of these electromagnetic devices are manually adjusted to achieve the optimum values of current at end-target. An overall experimental specifications of all components that have been utilized in focusing and steering is given. Mathematical description and simulations model of optimized values for electromagnetic quadrupole lens, magnetic ion beam steerer and switching magnet is described in this thesis. Simulation model provides great help to achieve optimum results for specific optic requirement.