[PP-07]

Development of a lanthanum hexaboride electron emitter

S. Y. Kim, H. J. You, Y. S. Choi, Y. H. Jung, K. S. Chung and M. J. Lee
Department of Nuclear Engineering, Hanyang University

A hollow type lanthanum hexaboride (LaB_6)electron emitter, which has a large area, indirectly heated cathode capable of continuous, high current electron emission, has been developed. It consists of LaB_6 of which diameter is 3 inch, tungsten filaments as indirect heaters of the LaB_6 disk, electrodes for heating tungsten filaments and emitting electrons from heated LaB_6, heat shields for holding up chamber temperature at below 100℃, and cooling parts for heat removal from electrodes and structures. Capabilities of heat removal and continuous operation for hundreds hours were main parameters in designing LaB_6 plasma source. Experiences gotten from operating this LaB_6 electron emitter will be good references in designing a LaB_6 electron emitter of a DC plasma current source for researching material interactions in DiPS (Divertor Plasma Simulator), which will be developed in Hanyang University later.