

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Lithium Ion Sources for Investigations of Fast Ion Transport in Magnetized Plasmas¹ HEINZ BOEHMER, YANG ZHANG, WILLIAM HEIDBRINK, ROGER MCWILLIAMS, UC Irvine, DAVID LENEMAN, STEPHEN VINCENA, UCLA, UC IRVINE TEAM, UCLA COLLABORATION — In order to study the interaction of ions of intermediate energies with plasma fluctuations, two plasma immersible Lithium ion sources of different size, based on solidstate thermionic emitters (Li-6 Aluminosilicate), were developed. Compared to discharge based ion sources ², they are compact, have zero gas load, small energy dispersion, and can be operated at any angle with respect to an ambient magnetic field of magnitude generally found in plasma experiments. Beam energies range from 400 eV to 2.0 keV with typical beam current densities in the 1 mA/cm² range. Because of the low ion mass of 6 amu, beam velocities of 100–300 km/s are in the range of Alfvén speeds in Helium or Hydrogen plasmas. Design considerations and operation in a high vacuum test chamber as well as in the high density, magnetized plasma of the LArge Plasma Device (LAPD) at UCLA will be detailed.

¹Work supported by DOE.

²H. Boehmer et al., Rev. Sci. Instrum., 75, 1013 (2004)

Yang Zhang
UC Irvine

Date submitted: 21 Jul 2006

Electronic form version 1.4