

Abstract Submitted  
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**Physical properties and potential applications of plasma focus ion beams.**<sup>1</sup> MARIO FAVRE, HEMAN BHUYAN, ENRRIQUE VALDERRAMA, FERNANDO GUZMAN, Pontificia Universidad Catolica de Chile, Departamento de Fisica, Casilla 306, Santiago 22, Chile — Plasma Focus (PF) discharges are known to produce pulsed high energy ion beams. We have performed an experimental study on the spatial distribution of the ion emission from a 1.8 kJ PF device operating in different gases. We have also conducted preliminary investigations on the interaction of these ion beams with different substrates. Simultaneous measurements at different angular directions for operation in methane indicate that the dominant charge states are  $H^+$ ,  $C^{+4}$  and  $C^{+5}$ , irrespective of the angular positions. The fluxes are maximum for the energy ranges 10–40 keV, 30–100 keV and 60–200 keV, for  $H^+$ ,  $C^{+4}$  and  $C^{+5}$ , respectively. Similar results are obtained with different gas fillings. The interaction of carbon ion beams with a silicon surface results in the formation of a surface layer of hexagonal silicon carbide, with embedded step/terraces structures. The result of the interaction of PF ion beams of different compositions with additional substrates will also be reported.

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