

Abstract Submitted
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The spatial and temporal variation of potentials in the HiPIMS discharge PALL SIGURJONSSON, University of Iceland, PETTER LARSSON, DANIEL LUNDIN, ULF HELMERSSON, Linköping University, JON TOMAS GUDMUNDSSON, University of Iceland — We describe measurements of the plasma parameters in a high power impulse magnetron sputtering (HiPIMS) discharge. A Langmuir probe is used to determine the plasma parameters, such as the electron temperature T_{eff} , the electron density n_e , the floating potential V_{fl} and the plasma potential V_{pl} , as well as the electron energy distribution function (EEDF). The spatial and temporal variation of the plasma parameters and electron energy distribution function are recorded in the pressure range 3 – 20 mTorr. The electron density peaks at $5 \times 10^{18} \text{ m}^{-3}$ for 40 – 80 mm distance from the target surface for all pressures investigated. The electron temperature reaches its peak value of 1.5 – 3 V roughly 80 μs after pulse initiation, in the pressure range 5 – 20 mTorr. The plasma potential and the floating potential peak at the end of the pulse. We will in particular describe the spatial variation of the plasma and floating potentials at various times during the discharge.

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