

Abstract Submitted
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Improving Efficiency of Ion Generation in Ion Source with Saddle Antenna VADIM DUDNIKOV, Muons, Inc., SYDNEI MURREY, TERRY PINNISI, CHIP PILLER, MANUIL SANTANA, MARTIN STOCKLI, ROBERT WELTON, ORNL, ROLLAND JOHNSON, Muons, Inc., MUONS, INC. TEAM, ORNL TEAM — Extraction of positive and negative ions from a saddle antenna radio-frequency surface plasma source (SA RF SPS) are considered. Several versions of new plasma generators with different antennas and magnetic field configurations were tested in the small Test Stand. The efficiency of positive ion generation in plasma has been improved up to ~ 0.2 A/cm² per 1 kW. For cesiation was used a heating of the cesium chromate cartridges. A small oven for cesium compounds and alloys decomposition by heating was developed and tested. After cesiation a current of negative ions to the collector was increased from ~ 1 mA to 10 mA with RF power ~ 1.5 kW in the plasma and longitudinal magnetic field $B_l \sim 250$ Gauss. A specific efficiency of H⁻ production was increased up to ~ 20 mA/cm² kW from previous ~ 2.5 mA/cm² kW.

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