

Abstract Submitted  
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**Comparing Theory and Experiment for Analyte Transport in the First Vacuum Stage of the ICP-MS** MATTHEW ZACHRESON, ROSS SPENCER, Brigham Young University — The Direct Simulation Monte Carlo algorithm as coded in FENIX has been used to model the transport of trace ions in the first vacuum stage of the inductively coupled plasma mass spectrometer. Haibin Ma collected two radial trace density profiles: one .5 mm upstream of the sampling cone and the other 10 mm downstream. We will compare the simulation results from FENIX with the experimental results. To better understand the simulation results, two fluid codes have been written. One uses ideal convection and the other uses both convection and diffusion. This enables us to compare convection, convection and diffusion, three body recombination, and full long-mean-free-path simulation with each other and with the experimental data in order to see the importance of each of these effects. Discharge quenching in the region upstream of the sampler has a significant effect on the trace density profile. This and other results will be presented.

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