

Abstract Submitted  
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**Electrostatic atomization: Effect of electrode materials on electrostatic atomizer performance**<sup>1</sup> ABHILASH SANKARAN, CHRISTOPHER STASZEL, BABAK KASHIR, ANTHONY PERRI, FARZAD MASHAYEK, ALEXANDER YARIN, Univ of Illinois - Chicago — Electrostatic atomization was studied experimentally with a pointed electrode in a converging nozzle. Experiments were carried out on poorly conductive canola oil where it was observed that electrode material may affect charge transfer. This points at the possible faradaic reactions that can occur at the surfaces of the electrodes. The supply voltage is applied to the sharp electrode and the grounded nozzle body constitutes the counter-electrode. The charge transfer is controlled by the electrochemical reactions on both the electrodes. The electrical performance study of the atomizer issuing a charged oil jet was conducted using three different nozzle body materials – brass, copper and stainless steel. Also, two sharp electrode materials – brass and stainless steel – were tested. The experimental results revealed that both the nozzle body material, as well as the sharp electrode material affected the spray and leak currents. Moreover, the effect of the sharp electrode material is quite significant.

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