

Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

DC breakdown in ethanol vapor¹ ZORAN PETROVIC, JRELENA SIVOS, NIKOLA SKORO, GORDANA MALOVIC, DRAGANA MARIC, Institute of Physics University of Belgrade Serbia — DC breakdown is investigated in ethanol vapor at low pressure. Discharge is initiated in parallel-plate electrode system, with copper cathode and transparent conductive anode, 5.4 cm in diameter. The distance between electrodes is adjustable. We present Paschen curve for ethanol measured at electrode separation of 1.1 cm and at pd values between 0.1 Torr cm and 3 Torr cm. Paschen curve has a characteristic shape with a rapid increase of the voltage in the left part and somewhat slower growth in the right-hand branch. The minimum breakdown voltage of 450 V occurs at around $pd = 0.35$ Torr cm. After breakdown, the discharge operates stable up to $pd = 0.7$ Torr cm. At higher pd- s, the discharge falls into relaxation oscillations, where it was possible to estimate the breakdown voltages from oscillatory patterns. To investigate elementary processes in the breakdown, for every point of Paschen curve corresponding axial profiles of emission are recorded by ICCD camera. The profiles reveal strong emission peak near the cathode. This indicates that heavy-particle processes play important role in the discharge at all pd values covered by measurements. At the lowest pd values, in the left - hand branch of the Paschen curve, heavy particles (ions, fast atoms and molecules) are dominant.

¹Supported by ON 171037 and III 41011 projects

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Date submitted: 14 Jun 2013

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