Gas temperature spatial distribution in air surface dielectric barrier discharge measured by schlieren imaging

Pinchuk M E[1,@], Lazukin A V[2] and Stepanova O M[1]

[1] Institute for Electrophysics and Electrical Power of the Russian Academy of Sciences, Dvortsovaya Naberezhnaya 18, Saint-Petersburg 191186, Russia
[2] National Research University Moscow Power Engineering Institute, Krasnokazarmennaya 14, Moscow 111250, Russia

[@] pinchme@mail.ru

Air temperature spatial distributions in outer space near surface dielectric barrier discharge (SDBD) system are determined by schlieren technique. The diagnostic technique was considered methodically in [1]. High voltage electrodes consisted of ten parallel aluminum foil strips on one side dielectric barrier (1 mm thickness, Al_2O_3 or AlN), reverse electrode was grounded and covered all dielectric barrier plate side. The SDBD excited by sinusoidal voltage with root-mean-square value of 2–3.5 kV across the barrier of aluminum nitride with frequencies of ≈ 4 and 20 kHz were investigated.

[1] Pinchuk M E, Lazukin A V and Stepanova O M 2020 Air temperature spatial distribution in corona discharge with plane comb of metal rod electrodes obtained by schlieren technique *XXXV Int. Conf. on Equations of State for Matter. Book of Abstracts* (Elbrus) p 314