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**Excited states and radicals formations in nanosecond pulse discharge and their evolution in afterglow** IVAN SHKURENKOV, DAVID BURNETTE, WALTER LEMPERS, IGOR ADAMOVICH, The Ohio State University — The results of nanosecond pulse discharge and afterglow simulations carried out with developed one-dimensional self-consistent model in  $N_2/O_2$  and  $H_2/N_2/O_2$  gas mixtures and comparison with experimental data are presented. Excited states and radicals formations in the discharge as well as mechanisms of the NO formation and destruction are discussed. It was shown that NO is rapidly formed in the reaction between excited nitrogen  $N_2^*$  (both triplet and singlet states) and atomic oxygen in afterglow and is destroyed by atomic nitrogen (reverse Zel'dovich mechanism).

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