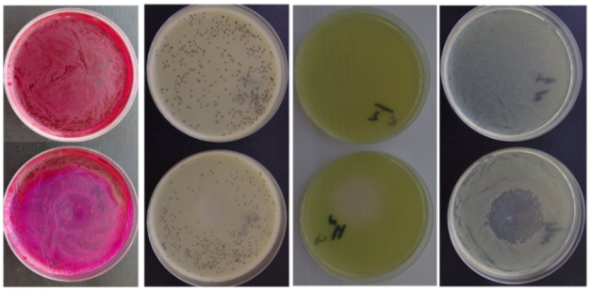
On the efficacy of sterilization by non-thermal plasma jets of DC and barrier discharges at atmospheric pressure

Yu.S. Akishev1,2, A.A. Balakirev1, V.B. Karalnik1, M.A. Medvedev3, A.V. Petryakov1, N.I. Trushkin1, A.G. Shafikov3, A.A. Kirillov4, A.V. Pavlova4, L.V. Simonchik4, N.V. Dudchik5, and O.E. Nezhvinskaya5

1Troitsk Institute for Innovation and Fusion Research, Troitsk, Moscow oblast, Russia,  
 [shurik\_na@bk.ru](mailto:shurik_na@bk.ru)  
2Moscow Engineering Physics Institute, Moscow, Russia, [akishev@triniti.ru](mailto:akishev@triniti.ru)  
3Moscow Institute of Physics and Technology, Dolgoprudny, Moscow Oblast, Russia,  
 [ayrat.shafikov@phystech.edu](mailto:ayrat.shafikov@phystech.edu)  
4Stepanov Institute of Physics, National Academy of Sciences of Belarus,Minsk, Belarus  
5Republican unitary enterprise Scientific Practical Centre of Hygiene, Minsk, Belarus

The report contains the experimental results on sterilization of the microorganisms (which??) by non-thermal plasma jets generated by steady-state DC glow discharge and dielectric barrier discharge at atmospheric pressure. Plasma forming gases are N2, Ar, He and their mixtures with O2. The results obtained allow us to split the contribution to biocide effect of different types of reactive agents such as UV radiation, the charged particles and ORS and NRS. This information is of great interest for the development of plasma sterilization mechanism that is important for optimization of plasma sources used in biomedicine, plasma medicine, etc.



a) b) c) d)

Fig. 1. Treatment of microorganisms consortium by an air glow discharge plasma jet. Treatment time is 10 minutes. Upper row – control samples, lower row – treated samples of a) E. coli,   
b) S. aureus, c) P. aeruginosa, d) consortium CG/N-1.

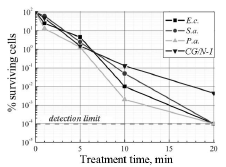


Fig. 2. Inactivation curves of individual microorganisms and their consortium in result of plasma jet exposure.