Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Cold ion atmospheric plasma jets for living tissue treatment
ALEXEY SHASHURIN, MICHAEL KEIDAR, The George Washington University, Department of Mechanical and Aerospace Engineering, School of Engineering and Applied Science, MARY ANN STEPP, The George Washington University, Department of Anatomy and Regenerative Biology — Recently a great attention is attracted to the creation of the cold plasma jets and their interaction with living tissue. The plasma gun operating on helium and equipped with high-voltage resonant transformer is designed. Long nondivergent plasma jets with length more than 5 cm and diameter 1-2 mm are obtained. The measured electrical current in the plasma jet indicates that the plasma jet is discontinuous and represents a series of propagating plasma bundles (two bundles per driving high voltage period) with peak current up to few hundred mA. The exposition of the living tissue (fibroblast cells and PEM cells) to the helium plasma jet causes an immediate detachment of part of the cells from their matrix in the case of direct contact of the jet with cell culture. In addition, it was found that migration velocity inside of the treated region significantly decreases in the case of treatment through the thin layer of the protecting media covering the cell culture.

Alexey Shashurin
The George Washington University, Department of Mechanical and
Aerospace Engineering, School of Engineering and Applied Science

Date submitted: 17 Jul 2008 Electronic form version 1.4