

GEC17-2017-000407

Abstract for an Invited Paper  
for the GEC17 Meeting of  
the American Physical Society

### **Therapy and decontamination by plasma sources**

KLAUS-DIETER WELTMANN, Leibniz Institute for Plasma Science and Technology (INP Greifswald)

Nowadays cold atmospheric pressure plasmas (CAP) with temperatures below 40 C offer new therapeutic possibilities. The interest in using plasma sources operating at atmospheric pressure is of increasing importance in life sciences. Plasma Medicine includes already established or applications in progress of gas discharge plasmas, such as the antimicrobial treatment (decontamination) of medical devices, pharmaceutical products or packaging materials as well as surface modification of implants (functionalization, coating) and furthermore different therapeutic applications. Consequently, practical application of CAP in medicine is currently focused on dermatology as well as plastic and aesthetic surgery and oncology.

Much basic research is still required to fully understand the complex mechanisms concerning the effects of plasmas on living cells and living tissue for avoiding side effects and identifying systematic treatment options. Whereby topics such as clean air, clean water and clean food are gaining more and more attention.

Nevertheless, future application in other fields are expected. Besides treatment of teeth and implants with different purposes, in dentistry also wounds as well as infective and inflammatory diseases of gum and oral mucosa will be targets of CAP application.

An overview about present plasma based devices in medicine in different application areas will be given followed by actual results achieved for wound healing and tumor treatment in different hospitals.

Main Author: Klaus-Dieter Weltmann from Leibniz Institute for Plasma Science and Technology (INP Greifswald). In collaboration with: Thomas von Woedtke, Torsten Gerling, Jürgen Kolb from Leibniz Institute for Plasma Science and Technology (INP Greifswald) and Hans-Robert Metelmann from Greifswald University Medicine, Greifswald, Germany