Abstract Submitted
for the GEC20 Meeting of
The American Physical Society

Control of electron dynamics and plasma chemistry in atmospheric rf plasma jets via voltage waveform tailoring[1] IHOR KOROLOV, DAVID STEUER, VOLKER SCHULZ-VON DER GARTHEN, Ruhr-University Bochum, Germany, ZOLTAN DONKO, Wigner Research Centre for Physics, Budapest, Hungary, LENA BISCHOFF, GERRIT HUBNER, Ruhr-University Bochum, Germany, PETER HARTMANN, Wigner Research Centre for Physics, Budapest, Hungary, YUE LIU, THOMAS MUSSENBROCK, Brandenburg University of Technology, Cottbus, Germany, JULIAN SCHULZE, Ruhr-University Bochum, Germany; Dalian University of Technology, China — Atmospheric pressure capacitively coupled radio frequency discharges operated in He/N2 and He/O2 mixtures and driven by tailored voltage waveforms are investigated using a COST microplasma reference jet as a function of the reactive gas admixture and the number of consecutive harmonics used to drive the discharge. We demonstrate that Voltage Waveform Tailoring (VWT) allows one to enhance the control of the dynamics of energetic electrons in distinct spatio-temporal regions of interest within the electrode gap and the RF period and, thus, to optimize and control the generation of helium metastables, atomic nitrogen or oxygen species.

[1]This work is supported by the DFG via SFB 1316 (projects A4 and B2), by the Hungarian NKFIH 119357, 11580 and K132158 grant.

Ihor Korolov
Ruhr Univ Bochum

Date submitted: 29 May 2020 Electronic form version 1.4