Abstract Submitted
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Electron dynamics in micro atmospheric pressure radio frequency plasma jets with customized electrode materials and topologies[1] LENA BISCHOFF, IHOR KOROLOV, GERRIT HUEBNER, Ruhr-University Bochum, Germany, ZOLTAN DONKO, 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, PROJECT A4 TEAM — Radio frequency driven micro atmospheric pressure plasma jets (u-APPJ) are commonly used to produce non-thermal plasmas and to generate reactive species suitable for various applications, e.g. biomedicine and modification of sensitive surfaces. The optimization of a given application by controlling the generation of reactive particles is a complex problem and can be influenced by the choice of the electrode materials and topologies. We perform a systematic investigation of the electron heating dynamics in a single frequency (13.56 MHz) u-APPJ with planar and structured electrodes made of different materials (e.g. stainless steel, Al, Cu). Helium with different N_2 or O_2 admixtures and a broad range of peak-to-peak driving voltage amplitudes are used. Based on experiments and simulations, we demonstrate that the choice of the electrode material and topology affect the electron heating dynamics, and thus, the formation of process relevant reactive species.

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Lena Bischoff
Ruhr-University Bochum, Germany

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