

Abstract Submitted  
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**Plasma Jet (V)UV-Radiation Impact on Biologically Relevant Liquids and Cell Suspension**<sup>1</sup> H. TRESP, ZIK plasmatis at INP Greifswald, R. BUSSIAHN, INP Greifswald, L. BUNDSCHERER, ZIK plasmatis at INP Greifswald, A. MONDEN, ZIK plasmatis at INP Greifswald, TU Eindhoven, M.U. HAMMER, K. MASUR, ZIK plasmatis at INP Greifswald, K.-D. WELTMANN, TH. V. WOEDTKE, INP Greifswald, S. REUTER, ZIK plasmatis at INP Greifswald — In this study the generation of radicals in plasma treated liquids has been investigated. To quantify the contribution of plasma vacuum ultraviolet (VUV) and ultraviolet (UV) radiation on the species investigated, three cases have been studied: UV of plasma jet only, UV and VUV of plasma jet combined, and the plasma effluent including all reactive components. The emitted VUV has been observed by optical emission spectroscopy and its effect on radical formation in liquids has been analyzed by electron spin resonance spectroscopy. Radicals have been determined in ultrapure water (dH<sub>2</sub>O), as well as in more complex, biorelevant solutions like phosphate buffered saline (PBS) solution, and two different cell culture media. Various compositions lead to different reactive species formation, e.g. in PBS superoxide anion and hydroxyl radicals have been detected, in cell suspension also glutathione thiyl radicals have been found. This study highlights that UV has no impact on radical generation, whereas VUV is relevant for producing radicals. VUV treatment of dH<sub>2</sub>O generates one third of the radical concentration produced by plasma-effluent treatment. It is relevant for plasma medicine because although plasma sources are operated in open air atmosphere, still VUV can lead to formation of biorelevant radicals.

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