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Controlling the nitric and nitrous oxide production of an atmospheric pressure plasma jet CLAIRE DOUAT, Eindhoven University of Technology, PMP, Eindhoven, The Netherlands / GREMI UMR7344CNRS,University of Orleans, France, SIMON HUBNER, Research Group Reactive Plasmas, Institute for Experimental Physics II, Ruhr-Universitt Bochum, 44780 Bochum, Germany, RICHARD ENGELN, Eindhoven University of Technology, PMP, Eindhoven, The Netherlands, JAN BENEDIKT, Research Group Reactive Plasmas, Institute for Experimental Physics II, Ruhr-Universitt Bochum, 44780 Bochum, Germany — Atmospheric pressure plasma jets are non-thermal plasmas and have the ability to create reactive species. These features make it a very attractive tool for biomedical applications. In this work, we studied NO and N_2O production, which are two species having biomedical properties. NO plays a role in the vascularization and in ulcer treatment, while N_2O is used as anesthetic and analgesic gas. In this study, the plasma source is similar to the COST Reference Microplasma Jet (–APPJ). Helium is used as feed gas with small admixtures of molecular nitrogen and oxygen of below 1%. The absolute densities of NO and N_2O were measured in the effluent of an atmospheric pressure RF plasma jet by means of ex-situ quantum-cascade laser absorption spectroscopy via a multi-pass cell in Herriot configuration. We will show that the species' production is dependent on several parameters such as power, flow and oxygen and nitrogen admixture. The NO and N_2O densities are strongly dependent on the N_2-O_2 ratio. Changing this ratio allows for choosing between a NO-rich or a N_2O-rich regime [1]. [1] Douat *et al*, *PSST*, **25** (2016) 025027

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