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Atmospheric pressure plasma modification and damage quantification of amino acids HAROLD MCQUAID, MARK TWEEDIE, DAVIDE MARIOTTI, PAUL MAGUIRE, Ulster University — Modification of biological material via non-thermal plasmas is continuing to gain much attention, however the mechanisms behind the damage enhancement and cell selectivity of plasmas are far from complete. Cysteine, a key amino acid in proteins, has been previously used in plasma interaction studies due to its relatively simple analysis and suitability as a biological model[1]. Investigations into plasma interaction with cysteine are currently limited to DBD[1], COST-jet and kINPen[2], and less directly via a DC plasma jet[3]. In this study the plasma induced interactions with cysteine are investigated using a remote RF plasma source containing He-H_2O and isolated from atmospheric impurities in order to observe effects with relatively simplified plasma chemistry. Using a droplet in plasma system[4] cysteine is passed through the plasma for 100 s and exposed to a high flux of electrons, ions and radicals. To aid understanding of the chemistry involved, buffer and radical scavenger solutions were also added. The modification of cysteine via each treatment method is analysed using FTIR and Raman spectroscopy and differences between those previously published are detected and attributed to a change in the plasma induced chemistry. 1. Kogelheide, F. et al. (2016). 2. Lackmann, J. W. et al. (2018). 3. Yan, D. et al. (2015). 4. M Maguire, P. D. et al. (2015).

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