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Plasma chemistry in electron-beam sustained discharges MILES TURNER, Dublin City University — There are many emerging applications that exploit the exotic chemical characteristics of plasmas. Some of these applications, if deployed on an industrial scale, involve processing much larger volumes of gas than seems reasonable using any atmospheric pressure plasma source in wide use today. We note that an electron-beam sustained discharge permits the creation of a atmospheric pressure plasma with reasonable uniformity, large volme, and widely controllable electron temperature. Robust and durable electron beam sources now exist that would facilitate such applications. In this paper we discuss the general advantages of this approach, and we present a modelling study concerned with the production of NO in mixtures of N_2 and O_2, looking towards plasma aided manufacturing of fertilizers.

Miles Turner
Dublin City University

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