

Abstract Submitted  
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**First steps towards the reaction kinetics of HMDSO in an atmospheric pressure plasma jet in argon**<sup>1</sup> DETLEF LOFFHAGEN, MARKUS M. BECKER, RÜDIGER FOEST, JAN SCHÄFER, FLORIAN SIGENEGER, INP Greifswald, Felix-Hausdorff-Str. 2, 17489 Greifswald, Germany — Hexamethyldisiloxane (HMDSO) is a silicon-organic compound which is often used as precursor for thin-film deposition by means of plasma polymerization because of its high deposition rate and low toxicity. To improve the physical understanding of the deposition processes, fundamental investigations have been performed to clarify the plasma-chemical reaction pathways of HMDSO and their effect on the composition and structure of the deposited film. The current contribution represents the main primary and secondary plasma-chemical processes and their reaction products in the effluent region of an argon plasma jet at atmospheric pressure. The importance of the different collision processes of electrons and heavy particles are discussed. Results of numerical modelling of the plasma jet and the Ar-HMDSO reaction kinetics indicate that the fragmentation of HMDSO is mainly initiated by collisions with molecular argon ions, while Penning ionization processes play a minor role for the reaction kinetics in the effluent region of the jet.

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