

Abstract Submitted
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Evaluation of gas phase and wall surface chemical reactions in CF_4 and C_4F_8 plasmas¹ XI-FENG WANG, Dalian University of Technology, China; Princeton Plasma Phys Lab, US, YUAN-HONG SONG, YOU-NIAN WANG, Dalian University of Technology, China, IGOR KAGANOVICH, Princeton Plasma Phys Lab, US — A global model implanted with a set of gas phase and wall surface chemical reactions is used in this work for CF_4 and C_4F_8 plasmas in an inductivity coupled plasma chamber. Firstly, by using the same set of chemical reactions, composition of radicals as well as ions is benchmarked. A study on contributions of gas phase and surface reactions to the production and consumption of species shows that surface chemistry plays a significant role in F, CF_3 and CF_2 radicals in CF_4 and C_4F_8 plasmas, respectively. We also study the variation of plasma properties as a function of pressure and power at fixed gas inlet. Furthermore, in order to investigate impacts of electron energy distribution functions (EEDF) on plasma sources and sinks, both Maxwellian and non-Maxwellian EEDFs integrated with cross sections are used to evaluate the difference of chemical compositions in these plasmas.

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