

Abstract Submitted
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Extreme ultraviolet spectroscopy of low pressure helium microwave driven discharges¹ SUSANA ESPINHO, EDGAR FELIZARDO, ELENA TATAROVA, LUIS LEMOS ALVES, Instituto de Plasmas e Fusao Nuclear, Instituto Superior Tecnico, Universidade de Lisboa, Portugal — Surface wave driven discharges are reliable plasma sources that can produce high levels of vacuum and extreme ultraviolet radiation (VUV and EUV). The richness of the emission spectrum makes this type of discharge a possible alternative source in EUV/VUV radiation assisted applications. However, due to challenging experimental requirements, publications concerning EUV radiation emitted by microwave plasmas are scarce and a deeper understanding of the main mechanisms governing the emission of radiation in this spectral range is required. To this end, the EUV radiation emitted by helium microwave driven plasmas operating at 2.45 GHz has been studied for low pressure conditions. Spectral lines from excited helium atoms and ions were detected via emission spectroscopy in the EUV/VUV regions. Novel data concerning the spectral lines observed in the 23 - 33 nm wavelength range and their intensity behaviour with variation of the discharge operational conditions are presented. The intensity of all the spectral emissions strongly increases with the microwave power delivered to the plasma up to 400 W. Furthermore, the intensity of all the ion spectral emissions in the EUV range decreases by nearly one order of magnitude as the pressure was raised from 0.2 to 0.5 mbar.

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