

The relationship between visible light emission and species fraction of the hydrogen ion beams extracted from 2.45 GHz microwave discharge

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Abstract-

The relationship between Balmer- α ; and Fulcher-band emissions with extracted H⁺, H²⁺, and H³⁺ ions is demonstrated for a 2.45 GHz microwave discharge. Ion mass spectra and optical measurements of Balmer- α ; and Fulcher-band emissions have been obtained with a Wien Filter having an optical viewport on the plasma chamber axis. The beam of approximately 1 mA is analyzed for different plasma conditions simultaneously with the measurement of light emissions both with temporal resolution. The use of visible light emissions as a valuable diagnostic tool for monitoring the species fraction of the extracted beams is proposed.

Index Terms-

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Citation:

Cortázar, O.D.; Megia-Macías, A.; Tarvainen, O.; Kalvas, T.; Koivisto, H. "The relationship between visible light emission and species fraction of the hydrogen ion beams extracted from 2.45 GHz microwave discharge", Review of Scientific Instruments, vol.86, no.8, pp.083309-1-083309-5, August, 2015.