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Diode laser atomic absorption and laser Induced fluorescence of Argon in a TCP plasma used for thin film sputter deposition TITAINA GIBERT, GREMI, CHRISTINE CHARLES, ANU, AMAEL CAILLARD, PASCAL BRAULT, MARTIN CORMIER, GREMI, PLASMA PROPULSION GROUP, CANBERRA COLLABORATION — A mobile laser platform is tested on a Transformer Coupled Plasma (TCP) radiofrequency (13.56 MHz) plasma of Argon used to sputter deposit metallic clusters or thin films on hydrogen fuel cell electrodes. The aim is to measure atomic absorption and laser induced fluorescence for the investigation of plasma parameters such as density and temperature. A tunable Toptika Laser diode is tuned on the $1s^2$ to $2p^2$ resonance line of atomic argon at the vacuum wavelength of 826,680nm. The laser beam power is measured after crossing about 20 cm of plasma giving the wavelength dependent absorption profile. The absorption is averaged on the whole path of the encountered plasma. The evolution of the absorption profiles with pressure and radiofrequency power is presented. A preliminary investigation of the fluorescence emission signal at right angle at the same wavelength is carried out. Future work on the investigation of less conventional lines (e.g. Platinum, Palladium) using this mobile platform will be discussed.

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