

Design of Thomson Scattering System Using VPH Grating for Plasma Processing

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Low temperature plasma diagnosis is one of the big issues in laboratory scale or processing industry. One of the most powerful techniques of plasma diagnostics is the use of the scattering of electromagnetic radiation from the plasma. Electron temperature and density are important parameters for understanding the information of plasmas in the plasma processing industry. Laser scattering experiments on plasma can provide a substantial amount of information about plasma parameters such as the electron density n_e , the electron temperature T_e , and the neutral density n_n and temperature T_n . Thomson scattering spectroscopy is used several method, in accordance with detector type. Commonly, Thomson scattering is used several notch filter to separate expanded wavelength. Since using a spectrometer with surface relief grating or notch filter, the system of the measurement will be complicated and bigger. In this study, using VPHG (Volume Phase Holographic Grating) in order to install the simple and cheap system. VPHG has the advantage of the system installation, because it can be Transmission Type. The diffraction efficiency and dispersion angle of VPHG is higher than the surface relief grating relatively. For a wavelength and bandwidth selection, Using a slit or mask to select a rejection wavelength instead of notch filter.

Keywords: Thomson scattering, VPHG, Electron temperature, Electron density