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Plasma VUV intensity as a function of its electron energy distribution LEE CHEN, JIANPING ZHAO, RON BRAVENEC, MERRITT FUNK, RADHA SUNDARARAJAN, Tokyo Electron America, Inc, KOJI KOYAMA, TOSHIHISA NOZAWA, Tokyo Electron Technology Development Institute, Inc, SEJI SAMUKAWA, Tohoku University — Vacuum ultraviolet (VUV) dosage during processing is a contributing factor of various plasma induced wafer damages. The VUV intensity at a spatial point is a convoluted result of VUV self-absorption and VUV emitting-species concentration. VUV is monitored by measuring the VUV-induced electron-hole generated in the dielectric films of sensors developed by Samukawa *et al* [B. Jinnai, S. Samukawa *et al.*, J. Appl. Phys. **107**, 043302 (2010)]. Spatially resolved VUV measurements of plasmas under various pressures and local electron energy distribution functions (EEDf) have been conducted. To broaden the variety of the EEDf, a radial line slot antenna (RLSA) and a flat inductive coil are alternatively used on the same experiment chamber, to excite microwave surface wave plasma (μSWP) and inductive RF plasma (ICP), respectively. Energetic electron population in the energy-range below the ionization is the primary source of the excitation of the VUV emitting states. The resulting VUV dosage could be minimized by controlling this energetic electron population of the plasma EEDf.

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