PHOTORESISTS STRIPPING USING DIELECTRIC BARRIER GLOW DISCHARGE PLASMA SYSTEM

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A novel radio frequency (rf) dielectric barrier glow discharge plasma (DBGD) was utilized to evaluate the AZ9912 photoresist (PR) stripping effect. Argon (Ar) and oxygen (O2) were employed as working gases and ignited under atmospheric pressure. The discharge power efficiency was calculated based on the Lissajous plot and could reach to 80%. Compared to rf atmospheric glow discharges generated with bare electrodes, the DBGD remains stable and uniform over a larger current. Time dependant dielectric breakdown (TDDB) testing was conducted to evaluate the reliability of gate oxide on MOS capacitors. The surface of the etched PR was characterized using optical microscope and atomic force microscope (AFM). The results showed that there were no visible residues and plasma-induced ion bombardment damage left on the surface. Optical Emission Spectroscopy (OES) was also used to study the working species during the stripping process and the results showed that the possible useful active species belong to the atomic O and OH radical.

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