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Etching in Chlorine Discharges Using an Integrated Feature Evolution-Plasma Model

By Helen H. Hwang

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 32 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Etching of semiconductor materials is reliant on plasma properties. Quantities such as ion and neutral fluxes, both in magnitude and in direction, are often determined by reactor geometry (height, radius, position of the coils, etc.) In order to obtain accurate etching profiles, one must also model the plasma as a whole to obtain local fluxes and distributions. We have developed a set of three models that simulates C12 plasmas for etching of silicon, ion and neutral trajectories in the plasma, and feature profile evolution. We have found that the location of the peak in the ion densities in the reactor plays a major role in determining etching uniformity across the wafer. For a stove top coil inductively coupled plasma (ICP), the ion density is peaked at the top of the reactor. This leads to nearly uniform neutral and ion fluxes across the wafer. A side coil configuration causes the ion density to peak near the sidewalls. Ion fluxes are thus greater toward the walls and decrease toward the center. In addition, the ions bombard the wafer at a slight angle....



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