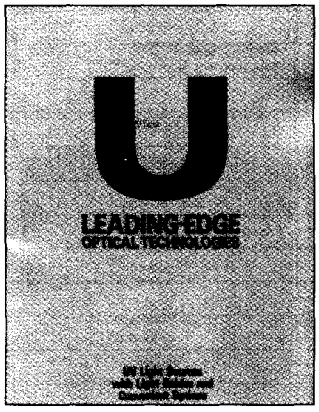
Product Literature Review



UV Fiber Optic Light Sources

Hoya-Schott manufactures a full line of Ultraviolet light sources and quartz fiber optic light guides designed for fast, high-precision adhesion of electric components, high quality curing of optical parts, and UV hardening in all production processes. We manufacture our own optical fibers and can make highly flexible, custom light guides for any application. *Hoya Corp. USA, San Jose, Calif.* 408/321-7705.

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Deep UV Optical Components

This catalog includes optical components for deep UV lithography and other applications. Included are finished optics and coatings for 126nm, 158nm, 193nm, 248nm, 308nm and 353nm and other UV wavelengths. Also included are VUV-UV-VIS-NIR optical fibers, UV enhanced aluminum coatings, and VUV-UV grade windows and lenses. *Acton Research Corp., Acton, Mass.* 508/263-3584.

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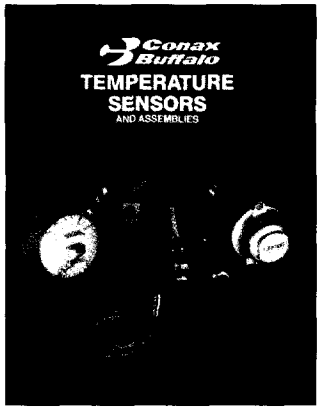

Temperature Sensors

Conax Buffalo temperature sensors provide accurate temperature measurement for numerous semiconductor manufacturing applications. Brochure outlines full line of RTD and thermocouple type sensors in wide variety of terminations and configurations. We also provide full line of pressure/vacuum scaling assemblies with exclusive, reusable soft sealant technology. *Conax Buffalo Corp., Buffalo, N.Y.* 716/684-4500.

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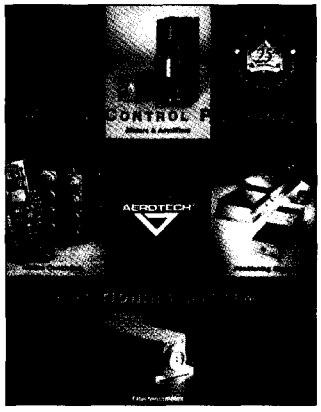

Motion Control Product Guide

This 272-page Product Guide contains complete design and technical data for Aerotech's extensive offering of linear and rotary positioning stages, microstepping translators, brush and brushless servo drives, and motion controllers (1 to 16 axes). This edition has new PC bus motion controller, air bearing positioning stages and a laser interferometer system. *Aerotech Inc., Pittsburgh, Pa.* 412/963-7470.

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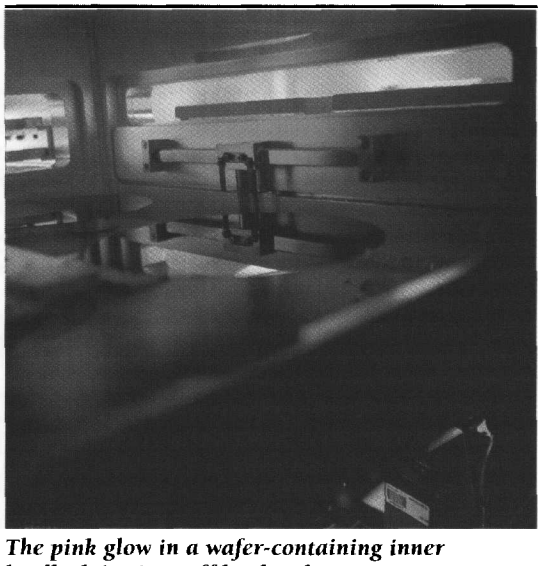
Features in Review

Plasma Ashing Moves Into the Mainstream

Peter Singer
Executive Editor

Ashing is the process of removing photoresist masks after etch or implant. Photoresists are typically composed of three basic elements: a novolac resin, a photoactive compound (such as diazonapthoquinone), and a solvent. All ashers work on the same basic principle: bulk resist removal is achieved by reacting atomic oxygen atoms with the resist, which is basically a hydrocarbon polymer, to create volatile CO, CO_2 and water as the main byproducts. The atomic oxygen is usually created by dissociating molecular oxygen in a microwave or rf plasma. Thermal decomposition by ozone also works well. The push to get high dissociation but low ionization has led manufacturers to adopt advanced plasma sources, including microwave and inductively-coupled plasma sources. Ozone and UV/ozone techniques eliminate the potential for ion damage altogether, but may be less suited for removing difficult residues.

One of the most important aspects of an ashing technique is the amount of damage that is caused by ion bombardment and/or wafer charging, a concern driven by the trend to thinner gate oxides which are more sensitive to plasma degradation. In etch, sidewall passivation is often used to help create near-vertical or anisotropic profiles, but this sidewall material (starting as $SiBr_x$ or $SiCl_x$ can be very difficult to remove. Residues from oxide etch also present difficulties, especially if they contain titanium and/or aluminum compounds. Metal etch residues, including chlorine which forms HCl, corrodes aluminum, making it desirable to strip the resist before it is exposed to the atmosphere. Regardless of the approach taken for ashing, wet cleans remain the most common method of removing polymer residues. Full residue removal with a dry approach requires a shift from oxygen-only ashing to more aggressive fluorine-containing recipes, causing advanced ashers to start to look like etchers in terms of materials of construction, advanced plasma sources and gas handling packages. □



The pink glow in a wafer-containing inner loadlock is given off by the plasma.