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Platinum Silicide Temperature Detectors

During the plasma etching of wafers, the detection of the end-point is important; in a system comprising polycrystalline silicon layers on a silica/silicon substrate this can be indicated by the temperature. The use of an infrared charge-coupled-device, consisting of a 320 × 244 platinum silicide Schottky barrier detector array, with associated equipment, for thermal imaging has been reported by V. Patel, M. Patel, S. Ayyagari, W. F. Kosonocky and D. Misra of the New Jersey Institute of Technology and B. Singh of the David Sarnoff Research Centre (*Appl. Phys. Lett.*, 1991, **59**, (11), 1299–1301).

The platinum silicide infrared imager is operated at 30 frames/second, and can detect radiation in the 3 to 5 μm spectral range.

The results from the platinum silicide Schottky barrier detector array were compared to those from the commonly used laser interferometry technique for thickness monitoring. It was found that the end-point for etching the polycrystalline silicon could be readily detected, and that the increase in the infrared signal after the silica etching was complete was caused by the heat of the exothermic reaction associated with the etching of silicon in the plasma medium, of carbon tetrafluoride and 15 per cent oxygen at a total pressure of 25 mTorr. The etch rates for polycrystalline silicon and silica were estimated to be 2100 and 1040 Å/min, respectively.

Thus, in addition to end-point detection, thermal imaging can be used for remote wafer temperature sensing, a critical parameter, affecting the etch rate and uniformity, the anisotropy, selectivity, and photoresist integrity.

Palladium Contact Materials

The development of a process that enables palladium-nickel alloy films of accurately controlled composition to be electrodeposited has been reported by scientists at AT&T Bell Laboratories, Murray Hill, New Jersey, (J. A. Abys, H. K. Straschil, I. Kadija, E. J. Kudrak and J. Blee, *Metal Finish.*, 1991, **89**, (7), 43).

The formulation of the bath depends upon the intended plating operation and the alloy required. While temperature, pH, current density, and solution agitation all influence the composition of the electrodeposit, the key factor is the palladium:nickel ratio of the bath. The bath is generally operated at about 35°C, and at a neutral to slightly alkaline pH.

Deposits range from 10 to 30 weight per cent nickel. They have excellent appearance and bulk thermal stability; they are very ductile, harder than hard gold and low in contaminants.