

TECHNOLOGY READINESS LEVEL: 5

US PATENT # 6,682,607

EARLY LAB PROTOTYPES HAVE DEMONSTRATED PROOF OF CONCEPT

TECHNOLOGY SUMMARY

Semiconductor device manufacturing relies centrally on the successful application of photoresist onto semiconductor substrates. The photoresist is then developed to form a mask, which in turn is used to define the features of the device. Occasionally the photoresist is substandard, requiring not only its removal but also the restoration of the substrate onto which it was applied. Current photoresist removal methods require the use of a high-energy plasma, which is a lengthy and potentially damaging process. Plasma removal processes also require additional substrate cleaning steps, adding to the time and cost of device manufacturing. Sandia National Laboratories has developed a superior alternative to current photoresist removal processes.

The superior surface reconditioning process is fast, clean and efficient. Within minutes a substandard layer of photoresist can be completely and cleanly removed from its substrate. The method involves rotating the substrate using a conventional automated spinner and contacting the photoresist layer with a stream of acetone. Under continued high speed rotation, the substrate is then exposed to a stream of methanol and then dried. By utilizing multiple organic solvent streams, the photoresist can be removed with significantly less damage than plasma methods. The method can easily integrate with pre-existing lithography equipment and allows for the stripping of unwanted photoresist at the same time that other batch substrates undergo processing.



POTENTIAL APPLICATIONS

- Wafer Reclaim and Recovery

TECHNOLOGICAL BENEFITS

- Faster, cleaner and less damaging than current plasma strip methods
- Can be incorporated into pre-existing photolithography equipment
- Minimizes delay in processing by allowing both processing and stripping of substrates within the same batch

TECHNOLOGY INQUIRY?

For more information or
licensing opportunities contact
us at

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Refer to SD # 6920

or

<https://ip.sandia.gov>