

December 5, 2006

Successful Development of Aplanador[®], CMP Slurry for Copper Interconnects with
Epoch-making Planarization Performance

Asahi Glass Co. Ltd.

Asahi Glass Co. Ltd. (Head Office: Tokyo; President & CEO: Masahiro Kadomatsu) has succeeded in developing a CMP (Chemical Mechanical Polishing) slurry for copper interconnects (product name: Aplanador[®]) that hardly generates any dishing (a dent on the interconnect) caused by copper CMP during the production process of copper interconnects for semiconductor integrated circuits. With a traditional product, as dishing of about 500Å (angstroms) appears during the polishing process, a thick coating must be placed over the copper to secure proper interconnect thickness. Actually dishing itself has been a critical factor that has drastically lowered the yield rate. As a result, we posted high production costs. The new Aplanador[®] will enable us to make the copper coating thinner and reduce processing times for both coating and CMP. Moreover with only minimal dishing, we expect a remarkable improvement in the yield rate as well as a radical decline in production costs for semiconductor integrated circuits.

High-performance semiconductor integrated circuits such as microprocessors and memory in line with the micronization of processes tend to increase the interconnect resistance value and thereby prompt heat generation, reducing the yield rate and preventing improvement in the process core speed. For this reason, the industry is accelerating the shift from aluminum, currently the most common wiring material, to lower-resistance copper. Accordingly the market for CMP slurries for copper interconnects which was worth roughly 40 billion yen in 2005 has been posting an annual growth rate of 20%.

Since 1993, Asahi Glass Co. Ltd. at its fully-owned subsidiary, Seimi Chemical Co. Ltd. (Head Office: Kanagawa; President & CEO: Yutaka Ando) has been engaged in the production and sales of CMP slurries for STI using its own micro-grinding production technology for cerium oxide (CeO₂). Taking advantage of its capability to manage the full production cycle including the selection of materials, Asahi Glass has been servicing customers around the globe. Meanwhile in 2004 the company launched the first CMP slurry for copper interconnects for Silica (SiO₂). We continued to develop CMP slurries as a key growth product component in our Electronics & Energy business, the third pillar under the company's "JIKKO-2007" medium-term management plan. Consequently, we successfully completed the development of Aplanador[®] offering epoch-making planarization performance.

We will begin in December 2006 distributing samples of Aplanador[®] and start mass production in 2007. To achieve our goal of attaining by 2010 a minimum of 25% of the global share in the market for CMP slurries for copper interconnects, we will found a new office in Taiwan as well as current Japan, Europe and America, Shanghai, a Singaporean office. We also plan on exploring the opening of global production sites.

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Reference:

1. Slurry

A fine, powdery substance mixed with water to form a gluey state

2. Å (angstrom)

A unit of length. 1 angstrom = 1.0×10^{-10} meters

3. STI (Shallow Trench Isolation) Structure

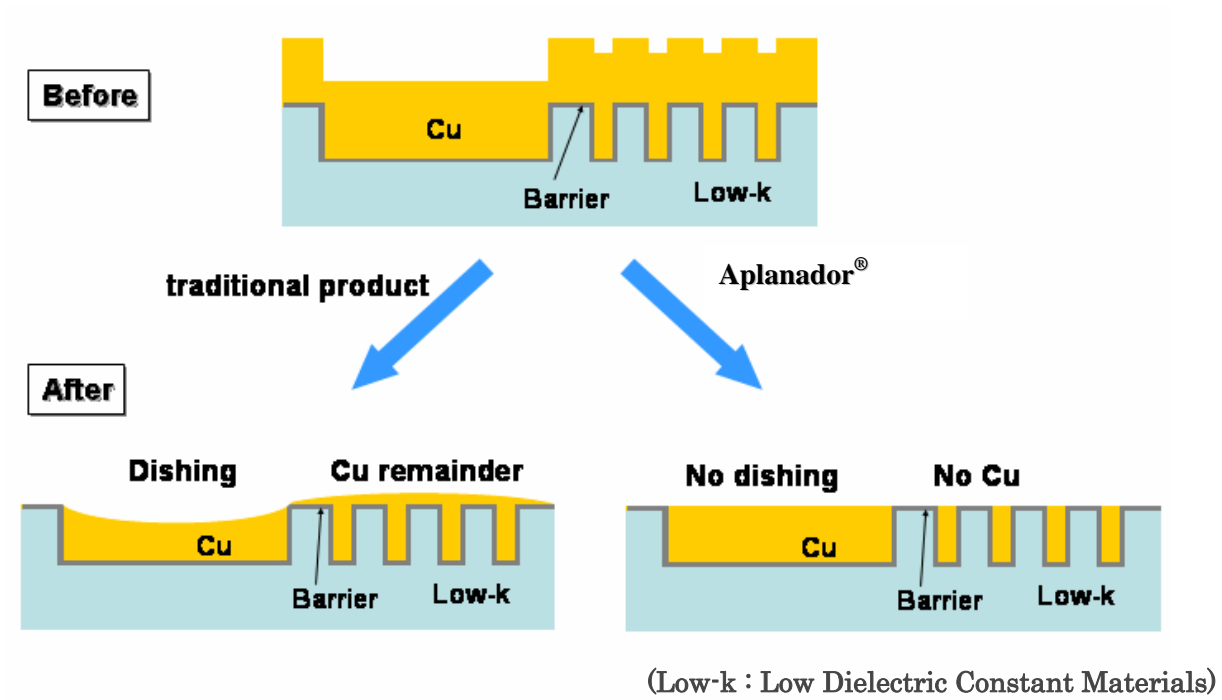
A method that electrically isolates semiconductor elements from one another by means of creating a shallow trench on the silicon substrate and filling it with carbon silicon film. It is a structure essential to electrically and independently mobilizing without interference each of the many elements loaded on a semiconductor integrated circuit.

4. Corporate Profile of Seimi Chemical Co. Ltd.

- (1) Name: Seimi Chemical Co. Ltd.
- (2) Head office: 3-2-10 Chigasaki , Chigasaki City, Kanagawa
- (3) Representative: President & CEO, Yutaka Ando
- (4) Capital: 1 billion yen
- (5) Shareholder: 100% owned by Asahi Glass Co. Ltd.
- (6) Major production sites: Chigasaki Plant (address as above)
Kashima Plant (2276-2 Nada, Hirai, Kashima City, Ibaraki)
Taiwan Seimi Co. Ltd. (Taiwan)
Baotou Tianjiao Seimi Polishing Powder Co. Ltd. (China)
- (7) Business components: Battery materials, liquid crystal materials, polishing chemicals (CMP slurry), fluoridated performance products, functional high molecule monomer, optical fiber materials
- (8) Established: December 18, 1947
- (9) Number of employees: 360

5. Polishing status

(1)Image picture



(2)Photo taken after CMP

With a traditional product, dishing of approximately 500 Å appeared in the area marked with an arrow in the photograph. Hardly any dishing is noted with Aplanador®.

