



ComPATSM Materials Compatibility Assurance Program

John Caligiuri and Dr. Laura Matz

Our topic today is BEOL interconnects, and a project that Air Products is involved in that will support materials integration in this area. My name is Ed McKendry and I'm here today with two people, John Caligiuri and Dr. Laura Matz.

John Caligiuri joined the Electronics Division in 1995 and has held various commercial roles across the division in our equipment business, the marketing group, and also in business development. John is currently in a marketing role as part of our Advanced Integration Materials team and is supporting new product development.

On the other side is Dr. Laura Matz who received her PhD in analytical chemistry from Washington State University. Laura joined Texas Instruments back in 2002 in the silicon technology development area, supporting development and integration for 130, 90, and 45nm technology. But today, Laura is with Air Products, she joined here in 2007 in the thin films group where she's led an effort on barrier dielectric precursor development, and now is the technical lead for the ComPAT low-k programs.

We're here today to talk about something called ComPAT low-k Compatibility Assurance Program, a mouthful. John Caligiuri is going to give us a quick overview of what is this ComPAT low-k program all about, John?

John Caligiuri: This program was developed as an extension of our technical and product application efforts. It has built for us a fundamental knowledge of the chemical interactions, the compatibility of the offerings in our portfolio, with this porous low-k dielectric film. So we started with our PDEMS ILD precursor and developed integration test data on each process step, in deposition, in CMP, and then final metal fill, to prove the compatibility of our offerings with PDEMS.

What kind of technical insights, Laura, has Air Products gained through this ComPAT program?

Laura Matz: Great question Ed, when we started out, we had strong programs, as John said, in the specific products for BEOL interconnect integration, specifically, wet cleans, CMP slurries, and post CMP cleans. What we hadn't evaluated was the compatibility of those chemistries with porous low-k films. At the completion, now a year later, after this project has been implemented, we now have an understanding of the chemistry aspects and compatibility of those products with porous low-k films and are able to tune the chemistry so that they are compatible while still maintaining the function that they serve in the integrated offering.

Talk a little bit about the ComPAT low-k service and what that means to an Air Products customer.

John Caligiuri: Well Ed, as a responsible materials supplier, we've always felt that understanding the chemical interaction of our products in our customer's process is our responsibility. So we developed this program so that we can have a background and the data that supports this high level of confidence we have in the success of our products. And to be able to have a baseline from which to work off of where our customer's requirements may differ from our testing but we have that fundamental understanding to know how to modify our existing products to create unique solutions for our customers.

So this program is really a set of data that is provided to a customer. Laura, I guess my question to you is why is Air Products providing this data to its customers?

Laura Matz: We have a strong internal philosophy within our Electronics group that we really want to help our customers through all stages of development, specifically, where the chemistry can impact the integration results. We're really dedicated to our internal focus in making our products more compatible with the porous low-k, as well as building the connection to the electrical purpose that the product serves. This is a commitment to our customers that we want to minimize their development cycle time where we can impact the chemistry aspects of that.

So, my question to both of you, trying to take the viewpoint of our listeners, what's the key message that we want them to take away from this conversation?

Laura Matz: It's really a commitment to our customers that we'll have a higher level of understanding for the BEOL integrated products and we'll be able to address their concerns and integration questions when they arise.

John Caligiuri: On the commercial side of that, ultimately we want to reduce the amount of iteration that they go through in selecting materials which ultimately will shorten the development cycle and lower their ultimate costs to create new offerings.

So, if someone wants to learn more about this, where can they find more information?

John Caligiuri: Well, to start Ed, we'll have a website set up at www.airproducts.com/compat where we'll have some of the original data that we had developed, as well as geographic contacts across Asia, North America, and Europe. We'll start there and we'll engage directly with our local teams throughout the world.

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