

By: Christopher Frerking (chris@ntknet.com)
Reg. No. 42,557

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,

Petitioners

v.

DANIEL L. FLAMM,

Patent Owner

CASE IPR2016-01512
U.S. Patent No. RE40,264

**DECLARATION OF DANIEL L. FLAMM IN
SUPPORT OF PATENT OWNER'S RESPONSE**

Mail Stop: PATENT BOARD
Patent Trial and Appeal Board
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Exhibit 2001

I, Daniel L. Flamm, Sc.D., hereby declare as follows:

1. I worked in academia, research, and industry in various roles for more than 50 years. My curriculum vitae, which includes a more detailed summary of my background, experience, and publication, is attached as Appendix A.
2. I have been a leading researcher and educator in the fields of semiconductor processing technology, air pollution control, materials science, and other areas of chemical engineering. My research has been funded by NASA, National Science Foundation, Environmental Protection Agency, and AT&T Bell Laboratories. While a Distinguished Member of Technical Staff at Bell Laboratories, I led a semiconductor processing research group comprised of research colleagues, visiting university scientists, post-doctoral associates, and summer students. I have also served as a technical consultant to various semiconductor device and processing equipment manufactures.
3. I have published over one hundred and fifty (150) technical journal articles and books, and dozens of articles in conference proceedings, most of them in highly competitive referred conferences and rigorously reviewed journals. I am an inventor listed in more than 20 U.S. patents, a number of which have been licensed through the industry, and most being in the general field of semiconductor processing technology.
4. I had experience studying and analyzing patents and patent claims from the

perspective of a person having ordinary skill in the art (“PHOSTIA”) stating at least at the time of my employment at AT&T Bell laboratories in 1977. At AT&T Bell Laboratories, I served as a member of the patent licensing review committee where I was responsible for reviewing hundreds of patents for potential utility and licensing potential. I have also served as a technical expert in patent disputes and litigation.

5. I was admitted to the patent bar as an Agent in 2003 and have been registered as a Patent Attorney since 2006. I am also a member of the California State Bar.

6. I am the inventor of U.S. Patent No. RE40,264, in the name of Daniel L Flamm and titled “(“the ‘264 Patent”).

7. I have read the Petitioners Petition for *Inter Partes* Review in this matter and the various art cited therein, including, among others, U.S. Patent No. 6,063,710 (“Kadomura”), Exhibit 1006 and U.S. Patent No. 5,151,871 (“Matsumura”), Exhibit 1007, each of which has been cited in IPR2016-01512.

8. I believe that a PHOSITA would conclude that Kadomura lacks key elements claimed by the ‘264 Patent. In particular, Kadomura teaches nothing about “a preselected time interval for changing temperature” as claimed but specifically teaches that while the temperature is being changed, no processing is performed, which suggests away from my invention. The maximum time interval available for the temperature change in Kadomura is a function of the time it

takes to discharge the first gas, and then to introduce the second gas and stabilize the second gas. There would be no benefit from attempting to preselect a time period, which is taught by my invention, to change the Kadomura temperature since there is no processing during the temperature change that would be affected by the duration of the change, and foreshortening the time for changing temperature would not otherwise improve the Kadomura process.

9. Additionally, at the time of the '264 invention, cryogenic etching taught by Kadomura was merely a laboratory curiosity that had been impractical owing to its various requirements to use ultracold fluids and gases, the difficulties in finding production worthy materials that could tolerate repeated cycling between room and low temperature without premature deterioration, brittle fractures, and leaks, and the relatively long times required to effectuate heating, cooling, and equilibration to attain sufficiently uniform and stable substrate temperatures.

10. Moreover, the objects of the Kadomura cryogenic etching process were to attain “high accuracy and fine fabrication simultaneously, as well as actually putting the low temperature etching technique into practical use.” (Ex. 1006 at 2:60-64.) By contrast, one of the '264 Patent’s primary objective was to increase throughput and selectivity of conventional plasma processes: “[the invention] overcomes serious disadvantages of prior art methods in which throughput and etching rate were lowered in order to avoid excessive device damage to a

workpiece.”

11. In summary, Kadomura’s technique of exhausting and replacing the gas between etches and employing very cold temperature results in relatively long intervals between etches, “about 30 sec.” (Ex. 1006 at 6:54, 8:42), which teaches away from my invention. Now, I will turn my discussion on Matsumura.

12. I believe that a PHOSITA would conclude that Matsumura is irrelevant as prior art against my invention. The object of Matsumura was the different processing steps and modules for laying a uniform film of photoresist onto a substrate prior before exposing the photoresist to light. After the resist composition is applied and baked, it is exposed through a pattern mask to light, thereby forming a latent image in the resist. The resist having the latent image is then processed to form a layer of patterned photoresist on the substrate.

13. Matsumura recognized that controlling heating and cooling during the “adhesion and baking processes” when precursor liquids are applied to semiconductor wafers and baked improved quality and reproducibility; Matsumura does not teach anything about etching as taught by my invention.

14. The crux of Matsumura’s inventive solution for baking resist was to heat the wafer “according to a schedule contoured to the baking process by means of a conductive thin film embedded in the substrate support structure in accordance with the schedule information” in a stored recipe. To improve adhesion before

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.