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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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LAM RESEARCH CORP.,

Petitioner

v.

DANIEL L. FLAMM,

Patent Owner

CASE IPR2016-0466  
U.S. Patent No. 5,711,849

**PATENT OWNER'S PRELIMINARY RESPONSE  
UNDER 37 C.F.R. § 42.107**

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Daniel L. Flamm, Sc.D., the co-inventor and sole owner of the U.S. Patent No. 5,711,849 (“the ‘849 patent”), through his counsel, submits this preliminary response pursuant to 37 C.F.R. § 42.107 and asks that the Patent Trial and Appeals Board decline to institute *inter partes* review on the instant petition because the petition fails to show a reasonable likelihood that any challenged claim is unpatentable.

## **I. Introduction**

Lam’s petition relies primarily on a paper written by James F. Battey in 1976, some twenty years before Dr. Flamm applied for the ‘849 patent. In a field as fast moving and competitive as the semiconductor industry, one would think that if Battey’s teachings were as similar to the ‘849 patent as Lam now contends, that someone would have discovered Dr. Flamm’s invention long before Dr. Flamm did. The explanation for this conundrum is simple: Battey is not even close to Dr. Flamm’s invention and lacks teaching even the basic elements of Dr. Flamm’s invention.

## **II. Background**

### **A. Dr. Flamm’s Invention**

The Background of the Invention in the ‘849 patent states the problems Dr. Flamm faced:

A limitation with the conventional plasma etching technique is

obtaining and maintaining etching uniformity within selected predetermined limits. In fact, the conventional technique for obtaining and maintaining uniform etching relies upon a “trial and error” process. The trial and error process often cannot anticipate the effects of parameter changes necessary for actual wafer production. Accordingly, the conventional technique for obtaining and maintaining etching uniformity is often costly, laborious, and difficult to achieve.

Another limitation with the conventional plasma etching technique is reaction rates between the etching species and the etched material are often not available. Accordingly, it is often impossible to anticipate actual etch rates from reaction rate constants since no accurate reaction rate constants are available. In fact, conventional techniques require the actual construction and operation of an etching apparatus to obtain accurate etch rates. Full-scale prototype equipment and the use of actual semiconductor wafers are often required, thereby being an expensive and time-consuming process.

(Ex. 1001 at 1:26-:44.)

Dr. Flamm’s solution to these problems is summarized in the first paragraph of the Summary of Invention:

According to the present invention, a plasma etching method that includes determining a reaction rate coefficient based upon etch profile data is provided. The present plasma etching method provides for an easy and cost effective way to select appropriate etching parameters such as reactor dimensions, temperature, pressure, radio frequency (rf) power, flow rate and the like by way of the etch profile data.

(*Id.* at 1:51-:57.)

The “reaction rate coefficient” is a key factor in the “surface reaction rate constant,” which appears in all claims of the ‘849 patent.

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