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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,

Petitioner

v.

DANIEL L. FLAMM,

Patent Owner

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

**PATENT OWNER'S RESPONSE
UNDER 37 C.F.R. § 42.120**

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OTHER AUTHORITIES

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PATENT OWNER LIST OF EXHIBITS

Exhibit 2001	Declaration of Daniel L. Flamm, Sc.D.
Exhibit 2002	<i>Lam Research Corp. v. Flamm</i> , IPR2015-01766, Paper No. 7 (Feb. 24, 2016)

COMES NOW Patent Owner, Daniel L. Flamm, Sc.D., the sole inventor and owner of the U.S. Patent No. RE40,264 (“the ‘264 patent”), through his counsel, submits this response pursuant to 37 C.F.R. § 42.120 and asks that the Patent Trial and Appeals Board confirm the patentability of claims 27, 31, 32, 34, 37, 40, 41, 44, 47, 48 and 50.

I. INTRODUCTION

This response addresses the two independent claims, 27 and 37, and dependent claims 31, 34, 41, 47, 48 and 50 that are the subject of the institution Order. The Board ruled that these claims would have been obvious “using Matumura’s control ‘recipes’ in Kadomura’s dry etching apparatus and method.” (Decision p. 22)

The obviousness issue revolves around the claim limitation, changing the temperature “within a preselected time interval for processing,” specifically:

wherein substrate temperature is changed from the selected first substrate temperature to the selected second substrate temperature, using a measured substrate temperature, within a preselected time interval for processing. . . .

(Ex. 1001 at 22:22-28.)

The parties and the Board have treated claims 27 and 37 as essentially the same for the points at issue. The focus of the present discussion is on Ground 1.

While Ground 3 also addresses claims 27 and 37, it adopts the obviousness

arguments of Ground 1. Petition at 50

II. OVERVIEW OF THE '264 PATENT

The '264 patent describes methods of fabricating semiconductors, preferably using a plasma discharge. Multiple substrate temperatures are employed in a continuous process for etching films, where temperature changing is achieved within a preselected time period.

One of the problems that was overcome by the invention is described at 2:17-25 (Ex. 1001) of the patent:

In general, implantation of ions into a resist masking surface causes the upper surface of said resist to become extremely cross-linked and contaminated by materials from the ion bombardment. If the cross-linked layer is exposed to excessive temperature, it is prone to rupture and forms contaminative particulate matter. Hence, the entire resist layer is often processed at a low temperature to avoid this particle problem.

Processing at low temperatures generally results in slower processing.

“Accordingly, the present invention overcomes these disadvantages of conventional processes by rapidly removing a majority of resist at a higher temperature after an ion implanted layer is removed without substantial particle generation at a lower temperature.” (*id.* at 2:26-30) The invention achieves “high etch rates while simultaneously maintaining high etch selectivity...” (*id.* at 2:32-33)

While methods involving the use of various temperatures for manufacturing

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