UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICRON TECHNOLOGY, INC.,
INTEL CORPORATION, GLOBALFOUNDRIES U.S., INC. and
SAMSUNG ELECTRONICS COMPANY, LTD.,
Petitioners,

v.

DANIEL L. FLAMM,
Patent Owner.

Case No. IPR2017-00406[1]
U.S. Patent No. 5,711,849

PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE TO PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 5,711,849

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[1] Samsung Electronics Company, Ltd. was joined as a party to this proceeding via Motion for Joinder in IPR2017-01748.

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Exhibit List

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1001	U.S. Patent No. 5,711,849 ("849 Patent")
1002	File History for U.S. Patent No. 5,711,849
1003	Declaration of Dr. David Graves ("Graves Decl.")
1004	*Curriculum Vitae* of Dr. David Graves
1005	Alkire et al., *Transient Behavior during Film Removal in Diffusion-Controlled Plasma Etching*, J. Electrochem. Soc.: Solid-State Science and Technology, March 1985, pp. 648-656 ("Alkire")
1006	Kao et al., *Analysis of Nonuniformities in the Plasma Etching of Silicon with CF_4/O_2*, J. Electrochem. Soc., Vol. 137 No. 3, March 1990, pp. 954-960 ("Kao")
1007	Galewski et al., *Modeling of a High Throughput Hot-Wall Reactor for Selective Epitaxial Growth of Silicon*, IEEE Transactions On Semiconductor Manufacturing, Vol. 5 No. 3, August 1991, pp. 169-179 ("Galewski")
1008	Klavs F. Jensen, *Chemical Engineering in the Processing of Electronic and Optical Materials: A Discussion,* Advances in Chemical Engineering, Vol. 16, 1991, pp. 395-412 ("Jensen 1991")
1009	Jensen et al., *Modeling and Analysis of Low Pressure CVD Reactors*, J. Electrochem. Soc., Vol. 130, No. 9, September 1983, pp. 1950-1957 ("Jensen 1983")
1010	Hess et al., *Plasma-Enhanced Etching and Deposition*, Microelectronics Processing, Chemical Engineering Aspects, Advances in Chemistry Series 221, pp. 377-440 ("Hess")
1011	Klavs F. Jensen, *Micro-Reaction Engineering Applications of Reaction Engineering to Processing of Electronic and Photonic Materials*, Chemical Engineering Science, Vol. 42, No. 5, 1987, pp. 923-958 ("Jensen 1987")

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Exhibit #	Description
1012	U.S. Patent No. 4,918,031 ("Flamm 031")
1013	U.S. Patent No. 5,304,282 ("Flamm 282")
1014	U.S. Patent No. 4,815,201 ("Harris")
1015	U.S. Patent No. 5,453,157 ("Jeng")
1016	Petition for *Inter Partes* Review, *Lam Research Corp. v. Daniel L. Flamm*, IPR2016-00466
1017	Declaration of Mariellen F. Calter regarding Alkire et al., *Transient Behavior during Film Removal in Diffusion-Controlled Plasma Etching* (1985), Kao et al., *Analysis of Nonuniformities in the Plasma Etching of Silicon with CF4/O2* (1990), and Galewski et al., *Modeling of a High Throughput Hot-Wall Reactor for Selective Epitaxial Growth of Silicon* (1992)
1018	Steinfeld et al., *Chemical Kinetics and Dynamics*, Prentice Hall, Inc., 1989
1019	Dennis M. Manos and Daniel L. Flamm, *Plasma Etching: An Introduction*, Academic Press, 1989
1020	G. B. Thomas, *Calculus and Analytical Geometry*, 4th Ed., Addison-Wesley, 1968
1021	Affidavit of Jared Bobrow in Support of Petitioner's Motion for Admission *Pro Hac Vice*
1022	Affidavit of Chad S. Campbell in Support of Petitioners' Motion for Pro Hac Vice Admission Under 37 C.F.R. §42.10(c)
1023	Reply Declaration of Dr. David Graves ("Graves Reply Decl.")

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1. INTRODUCTION

In his Response, Patent Owner ("Flamm") does nothing to rebut Petitioners' showing that independent claims 1, 10, 20, 22, and 26 are obvious in light of the combination of Alkire and Galewski. Flamm mischaracterizes the disclosure of Alkire and attacks the references individually rather than address the combination that Petitioners proposed. Moreover, Flamm's purported supporting declaration (Ex.2002) should be given little to no weight because it merely parrots the Response and presents Flamm's self-interested views. Flamm's arguments are unavailing.

Flamm attacks Alkire's disclosure on three grounds. First, Flamm argues that Alkire fails to disclose a "non-uniform etching profile." This argument is groundless, because (1) Alkire specifically describes a non-uniform etching profile and (2) its profile is "non-uniform" in the same way that the profile of the 849 Patent is non-uniform. Second, Flamm argues that Alkire discloses a different model for the surface reaction rate constant than either Galewski or the 849 Patent. This attacks a straw man, because even if the claims of the 849 Patent were limited to a specific model (which Flamm does not even argue), Alkire discloses effectively the same model as in the 849 Patent. Finally, Flamm attacks Alkire as teaching a surface reaction rate constant that is not temperature dependent. Flamm simply ignores the temperature dependence in Alkire's model.

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