

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY CORPORATION,
Petitioner

v.

RAYTHEON COMPANY,
Patent Owner

Case: IPR2015-01201

Patent 5,591,678

DECLARATION OF EUGENE A. FITZGERALD

TABLE OF CONTENTS

I.	Introduction	1
II.	Qualifications and Compensation	1
III.	Materials Considered	5
IV.	Level of Ordinary Skill in the Art	5
V.	My Understanding of Patent Law	6
A.	Burden of Proof	7
B.	Anticipation	7
C.	Obviousness.....	7
D.	Claim Construction	9
1.	“Etching”	9
2.	“Etchable Layer” and “Etch-Stop Layer”	10
3.	“Etching Away the Etchable Layer of the First Substrate Down to the Etch-Stop Layer”	11
VI.	Relevant Time Frame.....	12
VII.	Technical Background	13
A.	Integrated Circuit Manufacturing.....	13
1.	Moore’s Law	13
2.	Advanced Packaging	16
3.	Microelectronic Processes	18
4.	Material Removal Processes	19
VIII.	Predictability in the Art.....	31

IX.	The '678 Patent.....	34
X.	Prosecution History of the '678 Patent.....	34
XI.	The '678 Patent Requires Etching to Remove a Portion of its Substrate, and Does Not Disclose CMP for This Purpose	35
XII.	CMP is Not Etching, Does Not Include Etching and Therefore, CMP is Not “Similar” to Etching	38
	A. CMP and Etching Have Different Selectivity.....	40
	B. CMP and Etching Result in Different Roughness of Substrates	43
	C. CMP and Etching Result in Different Degrees of Contamination	45
	D. CMP and Etching Speeds Are Different.....	46
	E. CMP and Etching Involve Different Uniformity of Removal Across the Wafer	48
XIII.	Prior Art Analysis	49
	A. Bertin Does Not Anticipate Claims 1, 6, 7, 10 and 11 (Ground 1)	50
	1. Bertin is Not Prior Art	50
	B. The Combination of Bertin and Morimoto Would Not Render Claims 5 and 12-13 Obvious (Ground 2)	51
	1. Bertin is Not Prior Art	51
	2. Morimoto Does Not Disclose Etching	51
	3. Morimoto Does Not Disclose an Etch-Stop Layer	53
	4. Claim-by-Claim Analysis (Claims 5, 12 and 13).....	59
	C. The Combination of Morimoto With Any of the So-Called “CMP / Etching References” Would Not Render Claims 1-2, 4-5, 10, 13-14, and 16-17 Obvious (Ground 4).....	61

1.	Several of the So-Called “CMP / Etching References” are Not Prior Art	61
2.	The “CMP / Etching References” Would Not be Combined With Morimoto	62
3.	Claim Analysis	78
D.	Morimoto With Any of the “CMP / Etching References” in Combination With Oldham Would Not Render Claims 8 and 18 Obvious (Ground 5)	81
E.	Morimoto With Any of the “CMP / Etching References” in Combination With Bertin Would Not Render Claims 3 and 15 Obvious (Ground 6)	83
1.	Bertin is Not Prior Art	83
XIV.	Conclusion.....	83

Appendix 1 – *Curriculum Vitae*

Appendix 2 – List of Documents Considered

I. Introduction

1. The facts set forth below are known to me personally, and I have firsthand knowledge of them.
2. I make this Declaration in support of the Patent Owner's response to the Petition for *inter partes* review ("IPR") of U.S. Patent No. 5,591,678 ("the '678 Patent").
3. I have been retained by Steptoe & Johnson LLP on behalf of the Patent Owner, Raytheon Company.
4. I have been asked to provide my technical review, analysis, insights, and opinions on the materials I have reviewed in this case related to the '678 Patent, including the references cited in Petitioner's grounds of rejection set forth in Petition No. IPR2015-01201 for *Inter Partes* Review of the '678 Patent ("Petition"), and the scientific and technical knowledge regarding the same subject matter at the time of the inventions disclosed in the '678 Patent.

II. Qualifications and Compensation

5. I am over the age of eighteen and I am a citizen of the United States.
6. I have summarized in this section my educational background, career history, and other relevant qualifications. My curriculum vitae, including my qualifications, a list of the publications that I have authored during my technical

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.