UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ASML Netherlands B.V., ASML US, Inc., Excelitas Technologies Corp., and Qioptiq Photonics GmbH & Co. KG,
Petitioners

v.

Energetiq Technology, Inc.,
Patent Owner.

Case IPR2016-00776

DECLARATION OF J. GARY EDEN, PH.D.
REGARDING U.S. PATENT NO. 9,185,786
CLAIMS 15, 20, 21, AND 25

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

TABLE OF CONTENTS

Page

I. BACKGROUND 1
II. LEGAL PRINCIPLES 7
III. PERSON OF ORDINARY SKILL IN THE ART 8
IV. OVERVIEW OF THE '786 PATENT 10
A. Summary of the Prosecution History 12
V. CLAIM CONSTRUCTION 15
A. "light" 16
B. "substantially continuous laser energy" 18
VI. THE CHALLENGED CLAIMS ARE UNPATENTABLE 18
A. Laser Sustained Plasma Light Sources Were Known Long Before the Priority Date of the '786 Patent 19
B. Sustaining a plasma with a laser at various wavelengths, including those up to about 2000 nm, was well known in the art 20
C. Maintaining a plasma in an elongated form was well known in the art 32
VII. GROUNDS FOR FINDING THE CHALLENGED CLAIMS INVALID 36
A. Ground 1: Claims 15, 20, and 21 Are Unpatentable Over Gärtner in View of Mourou and Silfvast 37
1. Independent Claim 15 37
2. Dependent Claim 20 58
3. Dependent Claim 21 58
4. Reasons to Combine for Claims 20 and 21 59
B. Ground 2: Claim 25 is Unpatentable Over Gärtner in view of Mourou, Silfvast, and Uhlenbusch 60
1. Dependent Claim 25 60
C. Ground 3: Claims 15, 20, and 21 Are Unpatentable Over Gärtner in View of Kensuke and Silfvast 64
1. Independent Claim 15 65
2. Dependent Claim 20 73

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

3. Dependent Claim 21 73
4. Reasons to Combine for Claims 20 and 21 74
D. Ground 4: Claim 25 is Unpatentable over Gärtner in view of Kensuke, Silfvast, and Uhlenbusch 74
1. Dependent Claim 25 74
VIII. RESPONSE TO ARGUMENTS RAISED BY PATENT OWNER REGARDING OBJECTIVE INDICIA OF NON-OBVIOUSNESS 74
IX. AVAILABILITY FOR CROSS-EXAMINATION 76
X. RIGHT TO SUPPLEMENT 77
XI. JURAT 77

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

I, J. Gary Eden, Ph.D., declare as follows:

1. My name is J. Gary Eden.

I. BACKGROUND

2. I am the Gilmore Family Professor of Electrical and Computer Engineering and Director of the Laboratory for Optical Physics and Engineering at the University of Illinois in Urbana, Illinois.

3. I received a B.S. in Electrical Engineering (High Honors) from the University of Maryland, College Park in 1972 and an M.S. and Ph.D. in Electrical Engineering from the University of Illinois in 1973 and 1976, respectively.

4. After receiving my doctorate, I served as a National Research Council Postdoctoral Research Associate at the United States Naval Research Laboratory ("NRL"), Optical Sciences Division, in Washington, DC from 1975 to 1976. As a research physicist in the Laser Physics Branch (Optical Sciences Division) from 1976 to 1979, I made several contributions to the visible and ultraviolet lasers and laser spectroscopy field, including the co-discovery of the KrCl rare gas-halide excimer laser and the proton beam pumped laser (Ar-N_2, XeF). In 1979, I received a Research Publication Award for this work at the NRL.

5. In 1979, I was appointed assistant professor in the Department of Electrical and Computer Engineering at the University of Illinois. In 1981, I became associate professor in this same department, and in 1983, I became

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

professor in this department. In 1995, I was named the Director of the Laboratory for Optical Physics and Engineering, and in 2007, I was named the Gilmore Family Professor of Electrical and Computer Engineering. I continue to hold both positions today. In addition, I am also Research Professor in the Coordinated Science Laboratory and the Micro and Nanotechnology Laboratory, and I hold academic appointments at the University of Illinois in the Departments of Materials Science and Engineering, Bioengineering, and Nuclear, Plasma, and Radiological Engineering.

6. Since joining the faculty of the University of Illinois in 1979, I have been engaged in research in atomic, molecular and ultrafast laser spectroscopy, the discovery and development of visible and ultraviolet lasers, and the science and technology of microcavity plasma devices. My research has been featured in Laser Focus, Photonics Spectra, Electronics Weekly (UK), the Bulletin of the Materials Research Society, Microwaves, Optical Spectra, Electro-Optical Systems Design, Optics and Laser Technology, Electronics, Optics News, Lasers and Optronics, IEEE Potentials, IEEE Spectrum, and IEEE Circuits and Devices. My work was also highlighted in the National Academy of Sciences report Plasma 2010, published in 2007.

7. I have made several major contributions to the field of laser physics, plasma physics, and atomic and molecular physics. I co-invented a new form of

DOCKET ALARM
Find authenticated court documents without watermarks at docketalarm.com.

DOCKET ALARM

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.