

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS**

ENERGETIQ TECHNOLOGY, INC.,

Plaintiff,

v.

ASML NETHERLANDS B.V.,  
EXCELITAS TECHNOLOGIES CORP., and  
QIOPTIQ PHOTONICS GMBH & CO. KG,

Defendants.

Civil Action No. 1:15-cv-10240-LTS  
FILED UNDER SEAL

**DECLARATION OF DONALD K. SMITH, PH.D. IN SUPPORT OF  
ENERGETIQ'S MOTION FOR A PRELIMINARY INJUNCTION**

**I. INTRODUCTION**

1. I, Donald K. Smith, Ph.D., am President of Energetiq Technology, Inc. ("Energetiq"), which has its principal place of business at 7 Constitution Way, Woburn, MA 01801. I have worked at Energetiq Technology, Inc. in this capacity since 2004.

2. I submit this declaration in support of Energetiq's Motion for a Preliminary Injunction.

3. I have personal knowledge of the facts set forth in this declaration, unless otherwise noted. If called upon as a witness, I could and would competently testify to the statements made herein.

**II. QUALIFICATIONS**

4. I am a named inventor on each of the patents asserted in this litigation: United States Patent No. 7,435,982, entitled "Laser-Driven Light Source," (the "982" patent"), a true

ASML 1016

and correct copy of which is attached as Exhibit A; United States Patent No. 7,786,455, entitled “Laser-Driven Light Source,” (the “455 patent”), a true and correct copy of which is attached as Exhibit B; United States Patent No. 8,309,943, entitled “Laser-Driven Light Source,” (the “943 patent”), a true and correct copy of which is attached as Exhibit C; and United States Patent No. 8,525,138, entitled “Laser-Driven Light Source,” (the “138 patent”), a true and correct copy of which is attached as Exhibit D.

5. In addition, I have significant expertise in the design and functionality of high brightness light sources, including laser-driven light sources. I hold a Ph.D. in electrical engineering from the University of Wisconsin. Full descriptions of my educational background, professional achievements, qualifications and publications are set forth in my *curriculum vitae*, a true and correct copy of which is attached as Exhibit E to this declaration.

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#### IV. ENERGETIQ'S PATENTED TECHNOLOGY

7. For decades, the brightest broadband (white) light source for semiconductor wafer inspection and metrology was the Xenon or Mercury arc lamp. The brightness of this source was fundamentally limited by the basic principles of physics that it employed and failed to progress over time—even as the semiconductor industry demanded constant improvements in the throughput and resolution of wafer inspection and metrology.

8. For many years the necessary improvements in these tools had to come through steady improvements in the ability to detect and measure light, rather than from the ability to deliver more light into smaller places, because the arc lamp sources of light were not subject to improvement. This situation eventually led to an ever-growing pent-up demand for a fundamentally new light source in the deep ultra-violet (DUV), visible and infrared ranges of wavelengths. Such a demand existed in the market for at least five years before Energetiq's inventions that are the subject of this lawsuit – the Laser Driven Light Source technology.

9. Energetiq's patented Laser Driven Light Source technology provides a light source for these applications that provides brightness that is greater by an order of magnitude. Thus, Energetiq's technology has increased the productivity of the inspection and metrology tools in the industry greatly. In addition, the lifetime of Energetiq's light sources is about ten times longer than the previously used arc lamps.

10. No competitor technology can mimic these results. These results are both unexpectedly good and solve a long-felt need in the industry.

11. Energetiq's Laser Driven Light Source technology, including inventions covered by the '982, '455, '943, and '138 patents, have received much industry praise and many accolades, including the R&D 100 Award and the Prism Award. See "Winners of 2010 Prism Awards Announced," a true and correct copy of which is attached as Exhibit K; see also Letter

announcing the 2011 R&D 100 Award, a true and correct copy of which is attached as Exhibit L. Energetiq's laser-driven light source products have also generated tens of millions of dollars in revenue since 2009.

V.

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