UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CARL ZEISS SMT GMBH
Petitioner

v.

NIKON CORPORATION
Patent Owner

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Case IPR2013-00362
Patent 7,348,575

**PATENT OWNER'S
MOTION FOR OBSERVATION REGARDING
<u>SECOND CROSS EXAMINATION OF RICHARD C. JUERGENS</u>**

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Patent Owner, Nikon Corporation, hereby moves for observation of certain portions of the second cross examination of the Patent Owner's expert witnesses Mr. Juergens. Nikon requests that the Board enter the instant motion and consider the observations below.

A.   Testimony Demonstrating that the Optical Software, CODE V Version 10.6, Used by Mr. Juergens to Optimize Terasawa for Immersion Was Not Available in 2003

1.   In Ex. 2041, on page 27, lines 13-17, Mr. Juergens testified that he could not confirm that the source code for the functions and features that he used in version 10.6 of CODE V was the same as the source code in the 2003 version of the software, version 9.2. This testimony is relevant to page 12 of Petitioner's Reply (Paper No. 22) where Petitioner states that Mr. Juergens used optical design software CODE V which was available to a POSITA in 2003. This testimony is additionally relevant to paragraph 17 on page 11 of Mr. Juergens' supplemental declaration (Ex. 1036), where Mr. Juergens testifies that he was careful to use only those functions and features of the CODE V program that were available in the 2003 version. This testimony is relevant because it shows that neither Mr. Juergens nor Petitioner have any way of confirming the "functions and features" that Mr. Juergens used in the latest 10.6 version of CODE V would have been available to a POSITA in 2003.

2.	In Ex. 2041, on page 30, line 16 to page 46, line 16, Mr.

Juergens testified as to improvements in version 9.8, 10.1, 10.2, 10.3, 10.4, 10.5,

and 10.6 versions of the CODE V software. (See Exhibits 2029-2035,

respectively). This testimony is relevant to page 12 of Petitioner's Reply (Paper

No. 22) where Petitioner states that Mr. Juergens used optical design software

CODE V which was available to a POSITA in 2003. This testimony is

additionally relevant to paragraph 17 on page 11 of Mr. Juergens' supplemental

declaration (Ex. 1036), where Mr. Juergens testifies that he was careful to use only

those functions and features of the CODE V program that were available in the

2003 version. This testimony is relevant because it shows that neither Mr.

Juergens nor Petitioner have any way of confirming the "functions and features"

that Mr. Juergens used in the latest 10.6 version of CODE V would have been

available to a POSITA in 2003

**B.	Testimony Demonstrating that Mr. Juergens' Experiments Fail to
Show That the Prior Art Would Have Enabled a POSITA to
Make the Claimed Invention**

1.	In Ex. 2041, on page 17, line 14 to page 18, line 6, Mr.

Juergens testified that for a projection optical system, the RMS wavefront error

needs to be satisfied across the entire field of view (i.e., field width) and that an

image that is formed having an RMS wavefront error of greater than 0.07 waves

would not be useful for microlithography. This testimony is relevant to Mr.

Juergens' later testimony on page 109, lines 20-23; page 115, lines 2-4; and page 124, lines 10-15 of Ex. 2041 that the peak RMS wavefront errors for Experiments II-IV where 5.5, 120, and 4.5, respectively. This testimony is relevant because it shows that Mr. Juergens' Experiments I-IV fail to produce an immersed projection optical system that forms an image, as recited in independent claim 1.

2.   In Ex. 2041, on page 13, line 21 to page 14, line 7, Mr. Juergens testified that for a projection optical system to achieve good image quality, the RMS wavefront error values should less than 0.07 waves, and for lithography, often times the RMS wavefront error value is less than that. This testimony is relevant to the Mr. Juergens' later testimony on page 109, lines 20-23; page 115, lines 2-4; and page 124, lines 10-15 of Ex. 2041 that the peak RMS wavefront errors for Experiments II-IV where 5.5, 120, and 4.5, respectively. This testimony is relevant because it shows that Mr. Juergens' Experiments I-IV fail to produce an immersed projection optical system that forms an image, as recited in independent claim 1.

3.   In Ex. 2041, on page 110, lines 8-15, with reference to page 1 of Exhibit 2037 showing the RMS wavefront error corresponding to Mr. Juergens' Experiment II, Mr. Juergens testified that the projection lens design corresponding to Experiment II is not diffraction-limited over the entire field width, and that the design is badly aberrated over the field width, as the peak of the wavefront error is

approximately 5.5 waves RMS. This testimony is relevant to Mr. Juergens'

assertion at paragraph 20 on page 20 of his Supplemental Declaration (Zeiss 1036)

that the RMS wavefront error for the Experiment II design is 0.021 waves. This

testimony is relevant because it shows that Mr. Juergens failed to design an

immersed projection optical system having a low enough RMS wavefront error to

form an image, as recited in independent claim 1.

4.   In Ex. 2041, on page 110, line 16 to page 111, line 21, referring

to page 2 of Exhibit 2037 showing a distortion plot error corresponding to Mr.

Juergens' Experiment II, Mr. Juergens testified that the distortion plot shows

distortion levels that are approximately 1/3 of a percent, and that a projection

optical system with such levels of aberration could not be used in photolithography

because the distortion levels are larger than what would be useful, and that the

resulting image quality would not be very good. This testimony is relevant to the

Petitioner's assertion on page 13 of its Reply (Paper No. 22) that a POSITA could

have used CODE V software to redesign the optical prescription for FIG. 5 in

Terasawa by adding an immersion fluid between the last lens surface and the wafer

and re-optimizing to obtain an imaging performance as good as, or better than, the

original dry design of Terasawa. This testimony is relevant because, contrary to

Petitioner's assertion, it shows the resulting image quality of Mr. Juergens'

Experiment II is unusable.

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