

Request for Reconsideration after Final Action

The table below presents the data as entered.

Input Field	Entered
SERIAL NUMBER	79118716
LAW OFFICE ASSIGNED	LAW OFFICE 117
MARK SECTION (no change)	
ARGUMENT(S)	
<p>This is responsive to the May 9, 2013 final Office Action. All issues raised by the Examining Attorney are addressed herein. The application is believed to be in condition for acceptance and publication.</p> <p>First, Applicant acknowledges the Examining Attorney's indication that a majority of the goods and services have already been deemed acceptable. The Examining Attorney required clarification on a select number of items—the above amendment and ensuing remarks address these requests for clarification.</p> <p><u>Membranes</u></p> <p>First, in the identification of goods, the Examining Attorney asked what is meant by membranes. Applicant has amended the statement of goods by specifying that the membranes are comprised of silicon nitrate, silicon carbide, boron nitride, and polysilicon. Applicant trusts that this explanation is sufficient. Silicon membranes are commonly known terms of art. See examples of Exhibit A.</p> <p><u>X-Ray Filters</u></p> <p>The Examining Attorney also asked for clarification concerning x-ray filters. Submitted as Exhibit B is information that shows that "x-ray filters" is a term of art. Furthermore, Applicant asserts as follows:</p> <p style="padding-left: 40px;">Filters remove certain wavelengths of radiation. So, thinking of visible light, a yellow filter is minus-blue, there is no blue light left in the spectrum. Similarly, x-ray filters remove certain lines or ranges of x-ray radiation. You can even have band-pass filters where you apply two different coatings and allow only a narrow "band" of radiation to pass through.</p> <p style="padding-left: 40px;">With regard to electromagnetic radiation, an x-ray filter consists of specifically selected materials, used either singularly or several materials at once, that allow selected parts, regions or bands of the spectrum in use to pass through or be reflected.</p> <p><u>Diffraction Optics</u></p>	

As for the term “diffractive optics,” Applicant provides the following comments:

X-rays cannot, usually or efficiently, be refracted in the way that normal lenses do with light. Reflection or diffraction is used instead. So, people take Applicant’s membranes and use them as supports to create, for example, zone plates, or gratings. You could also use them as supports for crystalline coatings which could also diffract the light. Kinoforms are specially designed diffractive optics that have sloping bands rather than binary, on or off bands.

Furthermore, electro magnetic radiation (e.g., visible light) can be manipulated in three main ways: by refraction, reflection and diffraction. By analogy with photography, the lens is a refractive component but you can also get mirror lenses which can produce high magnification with a smaller physical size. There are, of course, drawbacks too. The wavelengths that Applicant uses do not allow for refraction. So, the Applicant uses diffraction instead. Returning to the photographic analogy, you could have a traditional optic lens, a mirror optic lens, or a diffractive lens—this latter lens is what is made by Applicant, i.e., diffractive optics.

Applicant further explains diffractive optics as follows: Reading glasses work by refraction. Mirrors work by reflection. The color on certain butterfly wings or on holograms is caused by diffraction.

Information about diffractive optics is found at Exhibit C.

Micro-Fluidic Devices

Micro-fluidic devices are small devices that allow fluids to flow through channels. Micro-fluidic devices are incorporated into the membranes. The application has been amended accordingly.

Heater Cells

Applicant also patterns heaters on to the surface of its membranes. If two of such membranes are placed together to form a cell, a heater cell is produced.

Test Specimens

Test specimens are patterns manufactured in ways similar to zone plates and gratings. These allow for testing of the resolution in aberrations of an optical system. They can also be used to characterize the ability of a system to resolve different chemical elements or compounds. They may consist of gradings, circular test patterns made of materials specific to the requirements of the system being tested, and with materials of specified concentration at known positions or with a known distribution.

Conclusion

Applicant believes its explanations, supplemental materials, and amendments now clarify then nature of the goods. The statement of goods should now be fully acceptable.

All issues having been addressed, the subject application is believed to be in condition for acceptance and publication. Early notice to that effect is solicited.

EVIDENCE SECTION

EVIDENCE FILE NAME(S)	
ORIGINAL PDF FILE	evi_6710987157-125730021_..UDLZ500084_ExA-C.pdf
CONVERTED PDF FILE(S) (6 pages)	\\TICRS\EXPORT16\IMAGEOUT16\791\187\79118716\xml10\RFR0002.JPG
	\\TICRS\EXPORT16\IMAGEOUT16\791\187\79118716\xml10\RFR0003.JPG
	\\TICRS\EXPORT16\IMAGEOUT16\791\187\79118716\xml10\RFR0004.JPG
	\\TICRS\EXPORT16\IMAGEOUT16\791\187\79118716\xml10\RFR0005.JPG
	\\TICRS\EXPORT16\IMAGEOUT16\791\187\79118716\xml10\RFR0006.JPG
	\\TICRS\EXPORT16\IMAGEOUT16\791\187\79118716\xml10\RFR0007.JPG
DESCRIPTION OF EVIDENCE FILE	Exhibits A-C
GOODS AND/OR SERVICES SECTION (009)(current)	
INTERNATIONAL CLASS	009
DESCRIPTION	
<p>Scientific instruments, namely, membranes, x-ray filters, diffractive optics, such as gratings and zoneplates, micro-fluidic and heater cells and test specimens used in synchrotrons, accelerator mass spectrometers (AMS), electron and optical microscopes; optical apparatus and instruments, namely, ultra-thin membranes; windows for x-ray, ultra violet, electron beam and optical instruments, namely, ultra thin membranes; ultra thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; optical specimen carriers for use in optical instruments; laboratory equipment, namely, microscope slides; vacuum windows, namely, ultra-thin membranes for use in for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; filter carriers, namely, carriers for x-ray filters; structural and replacement parts and fittings for all the aforesaid goods</p>	
GOODS AND/OR SERVICES SECTION (009)(proposed)	
INTERNATIONAL CLASS	009
TRACKED TEXT DESCRIPTION	
<p>Scientific instruments, namely, membranes, x-ray filters, diffractive optics, such as gratings and zoneplates, micro-fluidic and heater cells and test specimens used in synchrotrons, accelerator mass spectrometers (AMS), electron and optical microscopes; Scientific instruments, namely, membranes of silicon nitride, silicon carbide, boron nitride, polysilicon; optical apparatus and instruments, namely, ultra-thin membranes; x-ray filters; windows for x-ray, ultra violet, electron beam and optical instruments, namely, ultra thin membranes; diffractive optics such as gratings and zoneplates; ultra thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; scientific instruments, namely, micro-fluidic cells in the nature of small devices that allow fluids to flow through channels and</p>	

[membranes, heater cells being two membranes having heaters patterned into their surfaces, and test specimens being patterned membranes used to test the resolution and aberrations of an optical system, all for use in synchrotrons, accelerator mass spectrometers, electron and optical microscopes; ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry](#); optical specimen carriers for use in optical instruments; ~~vacuum windows, namely, ultra-thin membranes for use in for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry~~; laboratory equipment, namely, microscope slides; [vacuum windows, namely, ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry](#); ~~structural and replacement parts and fittings for all the aforesaid goods~~; filter carriers, namely, carriers for x-ray filters; [structural and replacement parts for all the aforesaid goods](#)

FINAL DESCRIPTION

Scientific instruments, namely, membranes of silicon nitride, silicon carbide, boron nitride, polysilicon; x-ray filters; diffractive optics such as gratings and zoneplates; scientific instruments, namely, microfluidic cells in the nature of small devices that allow fluids to flow through channels and membranes, heater cells being two membranes having heaters patterned into their surfaces, and test specimens being patterned membranes used to test the resolution and aberrations of an optical system, all for use in synchrotrons, accelerator mass spectrometers, electron and optical microscopes; ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; optical specimen carriers for use in optical instruments; laboratory equipment, namely, microscope slides; vacuum windows, namely, ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; filter carriers, namely, carriers for x-ray filters; structural and replacement parts for all the aforesaid goods

GOODS AND/OR SERVICES SECTION (037)(current)

INTERNATIONAL CLASS	037
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DESCRIPTION

Installation, maintenance and repair of scientific and optical apparatus and instruments, namely, synchrotrons, microscopes, x-ray microscopes, optical microscopes, electron microscopes and spectrometers; installation, maintenance and repair of structural and replacement parts and fittings for the aforesaid goods

GOODS AND/OR SERVICES SECTION (037)(proposed)

INTERNATIONAL CLASS	037
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TRACKED TEXT DESCRIPTION

Installation, maintenance and repair of scientific and optical apparatus and instruments, namely, synchrotrons, microscopes, x-ray microscopes, optical microscopes, electron microscopes and spectrometers; ~~installation, maintenance and repair of structural and replacement parts and fittings for the aforesaid goods~~; [installation, maintenance and repair of structural and replacement parts for the aforesaid goods](#)

FINAL DESCRIPTION

Installation, maintenance and repair of scientific and optical apparatus and instruments, namely, synchrotrons, microscopes, x-ray microscopes, optical microscopes, electron microscopes and spectrometers; installation, maintenance and repair of structural and replacement parts for the aforesaid goods

GOODS AND/OR SERVICES SECTION (042)(current)

INTERNATIONAL CLASS	042
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DESCRIPTION

Scientific research; technology research, namely, research and development of technology in the field of ultra thin membranes, lithographic products and microelectromechanical (MEMS) technology; and design relating thereto, namely, design relating to ultra thin membranes, lithographic products; microelectromechanical (MEMS) technology and micro-fluidic and heater cells

GOODS AND/OR SERVICES SECTION (042)(proposed)

INTERNATIONAL CLASS	042
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TRACKED TEXT DESCRIPTION

Scientific research; ~~technology research, namely, research and development of technology in the field of ultra thin membranes, lithographic products and microelectromechanical (MEMS) technology;~~ technology research, namely, research and development of technology in the field of ultra-thin membranes, lithographic products and microelectromechanical technology; ~~and design relating thereto, namely, design relating to ultra thin membranes, lithographic products;~~ and design relating thereto, namely, design of ultra thin membranes, lithographic products; ~~microelectromechanical (MEMS) technology and micro-fluidic and heater cells;~~ technology research, namely, research and development of technology in the field of microelectromechanical technology and micro-fluidic and heater cells

FINAL DESCRIPTION

Scientific research; technology research, namely, research and development of technology in the field of ultra-thin membranes, lithographic products and microelectromechanical technology; and design relating thereto, namely, design of ultra thin membranes, lithographic products; technology research, namely, research and development of technology in the field of microelectromechanical technology and micro-fluidic and heater cells

SIGNATURE SECTION

RESPONSE SIGNATURE	/sandramkoenig/
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SIGNATORY'S NAME	Sandra M. Koenig
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SIGNATORY'S POSITION	Attorney of record, Ohio bar member
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SIGNATORY'S PHONE NUMBER	216-363-9000
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DATE SIGNED	11/12/2013
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AUTHORIZED SIGNATORY	YES
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CONCURRENT APPEAL NOTICE FILED	YES
FILING INFORMATION SECTION	
SUBMIT DATE	Tue Nov 12 13:05:55 EST 2013
TEAS STAMP	USPTO/RFR-67.109.87.157-2 0131112130555141992-79118 716-5008052c1672e392259c6 88cffd997898ab243aa342145 c5762b18623c0a4a34c-N/A-N /A-20131112125730021056

PTO Form 1930 (Rev 9/2007)
OMB No. 0651-0050 (Exp. 05/31/2014)

Request for Reconsideration after Final Action To the Commissioner for Trademarks:

Application serial no. **79118716** has been amended as follows:

ARGUMENT(S)

In response to the substantive refusal(s), please note the following:

This is responsive to the May 9, 2013 final Office Action. All issues raised by the Examining Attorney are addressed herein. The application is believed to be in condition for acceptance and publication.

First, Applicant acknowledges the Examining Attorney's indication that a majority of the goods and services have already been deemed acceptable. The Examining Attorney required clarification on a select number of items—the above amendment and ensuing remarks address these requests for clarification.

Membranes

First, in the identification of goods, the Examining Attorney asked what is meant by membranes. Applicant has amended the statement of goods by specifying that the membranes are comprised of silicon nitrate, silicon carbide, boron nitride, and polysilicon. Applicant trusts that this explanation is sufficient. Silicon membranes are commonly known terms of art. See examples of Exhibit A.

X-Ray Filters

The Examining Attorney also asked for clarification concerning x-ray filters. Submitted as Exhibit B is information that shows that "x-ray filters" is a term of art. Furthermore, Applicant asserts as follows:

Filters remove certain wavelengths of radiation. So, thinking of visible light, a yellow filter is minus-blue, there is no blue light left in the spectrum. Similarly, x-ray filters remove certain lines or ranges of x-ray radiation. You can even have band-pass filters where you apply two different coatings and allow only a narrow "band" of radiation to pass through.

With regard to electromagnetic radiation, an x-ray filter consists of specifically selected materials, used either singularly or several materials at once, that allow selected parts, regions or bands of the spectrum in use to pass through or be reflected.

Diffractive Optics

As for the term "diffractive optics," Applicant provides the following comments:

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Applicant further explains diffractive optics as follows: Reading glasses work by refraction. Mirrors work by reflection. The color on certain butterfly wings or on holograms is caused by diffraction.

Information about diffractive optics is found at Exhibit C.

Micro-Fluidic Devices

Micro-fluidic devices are small devices that allow fluids to flow through channels. Micro-fluidic devices are incorporated into the membranes. The application has been amended accordingly.

Heater Cells

Applicant also patterns heaters on to the surface of its membranes. If two of such membranes are placed together to form a cell, a heater cell is produced.

Test Specimens

Test specimens are patterns manufactured in ways similar to zone plates and gratings. These allow for testing of the resolution in aberrations of an optical system. They can also be used to characterize the ability of a system to resolve different chemical elements or compounds. They may consist of gradings, circular test patterns made of materials specific to the requirements of the system being tested, and with

materials of specified concentration at known positions or with a known distribution.

Conclusion

Applicant believes its explanations, supplemental materials, and amendments now clarify then nature of the goods. The statement of goods should now be fully acceptable.

All issues having been addressed, the subject application is believed to be in condition for acceptance and publication. Early notice to that effect is solicited.

EVIDENCE

Evidence in the nature of Exhibits A-C has been attached.

Original PDF file:

[evi_6710987157-125730021_.UDLZ500084_ExA-C.pdf](#)

Converted PDF file(s) (6 pages)

[Evidence-1](#)

[Evidence-2](#)

[Evidence-3](#)

[Evidence-4](#)

[Evidence-5](#)

[Evidence-6](#)

CLASSIFICATION AND LISTING OF GOODS/SERVICES

Applicant proposes to amend the following class of goods/services in the application:

Current: Class 009 for Scientific instruments, namely, membranes, x-ray filters, diffractive optics, such as gratings and zoneplates, micro-fluidic and heater cells and test specimens used in synchrotrons, accelerator mass spectrometers (AMS), electron and optical microscopes; optical apparatus and instruments, namely, ultra-thin membranes; windows for x-ray, ultra violet, electron beam and optical instruments, namely, ultra thin membranes; ultra thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; optical specimen carriers for use in optical instruments; laboratory equipment, namely, microscope slides; vacuum windows, namely, ultra-thin membranes for use in for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; filter carriers, namely, carriers for x-ray filters; structural and replacement parts and fittings for all the aforesaid goods

Original Filing Basis:

Filing Basis Section 66(a), Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Proposed:

Tracked Text Description: ~~Scientific instruments, namely, membranes, x-ray filters, diffractive optics, such as gratings and zoneplates, micro-fluidic and heater cells and test specimens used in synchrotrons, accelerator mass spectrometers (AMS), electron and optical microscopes;~~ [Scientific instruments, namely, membranes of silicon nitride, silicon carbide, boron nitride, polysilicon;](#) ~~optical apparatus and instruments, namely, ultra-thin membranes; x-ray filters; windows for x-ray, ultra violet, electron beam and optical instruments, namely, ultra thin membranes;~~ [diffractive optics such as gratings and zoneplates;](#) ~~ultra thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry;~~ [scientific instruments,](#)

namely, micro-fluidic cells in the nature of small devices that allow fluids to flow through channels and membranes, heater cells being two membranes having heaters patterned into their surfaces, and test specimens being patterned membranes used to test the resolution and aberrations of an optical system, all for use in synchrotrons, accelerator mass spectrometers, electron and optical microscopes; ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; optical specimen carriers for use in optical instruments; ~~vacuum windows, namely, ultra-thin membranes for use in for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry;~~ laboratory equipment, namely, microscope slides; vacuum windows, namely, ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; ~~structural and replacement parts and fittings for all the aforesaid goods;~~ filter carriers, namely, carriers for x-ray filters; structural and replacement parts for all the aforesaid goods

Class 009 for Scientific instruments, namely, membranes of silicon nitride, silicon carbide, boron nitride, polysilicon; x-ray filters; diffractive optics such as gratings and zoneplates; scientific instruments, namely, micro-fluidic cells in the nature of small devices that allow fluids to flow through channels and membranes, heater cells being two membranes having heaters patterned into their surfaces, and test specimens being patterned membranes used to test the resolution and aberrations of an optical system, all for use in synchrotrons, accelerator mass spectrometers, electron and optical microscopes; ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon, for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; optical specimen carriers for use in optical instruments; laboratory equipment, namely, microscope slides; vacuum windows, namely, ultra-thin membranes of silicon nitride, silicon carbide, boron nitride, polysilicon for use in the field of x-ray microscopy, electron and optical microscopy and accelerator mass spectrometry; filter carriers, namely, carriers for x-ray filters; structural and replacement parts for all the aforesaid goods

Filing Basis Section 66(a), Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Applicant proposes to amend the following class of goods/services in the application:

Current: Class 037 for Installation, maintenance and repair of scientific and optical apparatus and instruments, namely, synchrotrons, microscopes, x-ray microscopes, optical microscopes, electron microscopes and spectrometers; installation, maintenance and repair of structural and replacement parts and fittings for the aforesaid goods

Original Filing Basis:

Filing Basis Section 66(a), Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Proposed:

Tracked Text Description: Installation, maintenance and repair of scientific and optical apparatus and instruments, namely, synchrotrons, microscopes, x-ray microscopes, optical microscopes, electron microscopes and spectrometers; ~~installation, maintenance and repair of structural and replacement parts and fittings for the aforesaid goods;~~ installation, maintenance and repair of structural and replacement parts for the aforesaid goods

Class 037 for Installation, maintenance and repair of scientific and optical apparatus and instruments, namely, synchrotrons, microscopes, x-ray microscopes, optical microscopes, electron microscopes and spectrometers; installation, maintenance and repair of structural and replacement parts for the aforesaid

goods

Filing Basis Section 66(a), Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Applicant proposes to amend the following class of goods/services in the application:

Current: Class 042 for Scientific research; technology research, namely, research and development of technology in the field of ultra thin membranes, lithographic products and microelectromechanical (MEMS) technology; and design relating thereto, namely, design relating to ultra thin membranes, lithographic products; microelectromechanical (MEMS) technology and micro-fluidic and heater cells
Original Filing Basis:

Filing Basis Section 66(a), Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

Proposed:

Tracked Text Description: Scientific research; ~~technology research, namely, research and development of technology in the field of ultra thin membranes, lithographic products and microelectromechanical (MEMS) technology;~~ technology research, namely, research and development of technology in the field of ultra-thin membranes, lithographic products and microelectromechanical technology; ~~and design relating thereto, namely, design relating to ultra thin membranes, lithographic products;~~ and design relating thereto, namely, design of ultra thin membranes, lithographic products; ~~microelectromechanical (MEMS) technology and micro-fluidic and heater cells;~~ technology research, namely, research and development of technology in the field of microelectromechanical technology and micro-fluidic and heater cells

Class 042 for Scientific research; technology research, namely, research and development of technology in the field of ultra-thin membranes, lithographic products and microelectromechanical technology; and design relating thereto, namely, design of ultra thin membranes, lithographic products; technology research, namely, research and development of technology in the field of microelectromechanical technology and micro-fluidic and heater cells

Filing Basis Section 66(a), Request for Extension of Protection to the United States. Section 66(a) of the Trademark Act, 15 U.S.C. §1141f.

SIGNATURE(S)

Request for Reconsideration Signature

Signature: /sandramkoenig/ Date: 11/12/2013

Signatory's Name: Sandra M. Koenig

Signatory's Position: Attorney of record, Ohio bar member

Signatory's Phone Number: 216-363-9000

The signatory has confirmed that he/she is an attorney who is a member in good standing of the bar of the highest court of a U.S. state, which includes the District of Columbia, Puerto Rico, and other federal territories and possessions; and he/she is currently the applicant's attorney or an associate thereof; and to the best of his/her knowledge, if prior to his/her appointment another U.S. attorney or a Canadian attorney/agent not currently associated with his/her company/firm previously represented the applicant in this matter: (1) the applicant has filed or is concurrently filing a signed revocation of or substitute power of attorney with the USPTO; (2) the USPTO has granted the request of the prior representative to withdraw; (3) the applicant has filed a power of attorney appointing him/her in this matter; or (4) the

applicant's appointed U.S. attorney or Canadian attorney/agent has filed a power of attorney appointing him/her as an associate attorney in this matter.

The applicant is filing a Notice of Appeal in conjunction with this Request for Reconsideration.

Serial Number: 79118716

Internet Transmission Date: Tue Nov 12 13:05:55 EST 2013

TEAS Stamp: USPTO/RFR-67.109.87.157-2013111213055514

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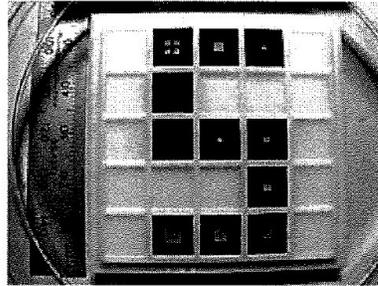
N/A-N/A-20131112125730021056



CONTACT US HOME

> Standard windows
> Multi-frame arrays
> Large area windows
> Multi-element windows
> Windows for TEM
> Bespoke service
> MEMS Prototyping
> Lithography wafers
> Zone Plates & Lithographic Products

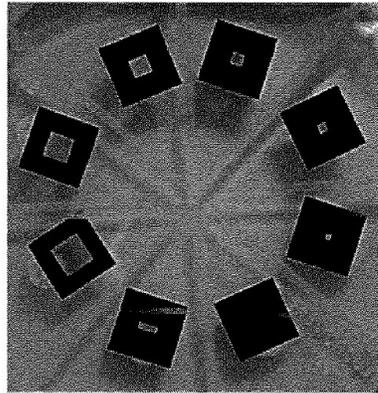
Since 1994, Silson Ltd had been supplying ultra-thin membranes and related lithographic products to Corporations, Universities and Government Research Laboratories throughout the world. Products are extensively used within the x-ray and e-beam communities but additionally Silson is now able to offer a MEMS prototyping service.



Standard silicon nitride membrane windows

The standard range of Silson silicon nitride membrane windows consist of square silicon nitride membranes in square silicon supporting frames. The standard frame sizes are: 5.0, 7.5 and 10.0 mm.

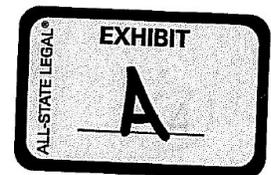
The default frame thickness is 200 µm but we are also able to offer the full range of membrane thicknesses on 381, 525 and now 100 µm thick substrate stock. The standard membrane sizes are: 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0 and 5.0 mm



The maximum membrane size within a 5.0 mm frame is 1.5 mm and the maximum for a 7.5 mm frame is 3.0 mm. Otherwise, the full range of membrane sizes is available within each of the standard frame sizes. The following range of standard membrane thicknesses is available: 30, 50, 75, 100, 150, 200, 500 and 1000 nm.

If your preferred design is not covered by the above permutations then we may be able to help you with one of our other products.

[Use the standard product finder to see if your preferred permutation is available.](#) 



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siliconmembranes.com
silicone- rubber sheets: Email us info@hpp.cocoxmail.com Applications. Aerospace / Composites — Solar Energy — Heat Sealing — Jerky / Food Processing ...

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[www.ebay.com/sch/i.html?_nkw=silicon+membrane](#)
Find great deals on eBay for **silicon membrane** and **silicon sheet**. Shop with confidence.

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Printable Data Sheet Wood Working: **Silicone Rubber Membranes** for Hi-Temp Veneer & Thermofoil Pressing Applications.

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[www.ebay.com/sch/i.html?_nkw=silicone+membrane](#)
Find great deals on eBay for **silicone membrane** and **silicone rubber sheet**. Shop with confidence.

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[www.norcada.com/products/silicon-membrane](#)
Standard Single Crystal (100) **Silicon Membrane**: Norcada manufactures single crystal **silicon membrane** devices for X-Ray diffraction and a range of other applications.

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[www.sspinc.com/products_and_services/Thin_Silicone_Membranes_4...](#)
SSP manufactures ultra-thin polydimethylsiloxane (PDMS) sheets for use in **membrane** applications.

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[www.appnano.com/products/membranes/silicon-membranes](#)
Our SIWD line of **silicon membranes** are useful for electrically conducting purposes, and can easily be made hydrophobic or hydrophilic according to the desired function.

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[www.nextag.com/Silicon-Membrane/stores.html](#)
Silicon Membrane - 143 results like Bin Aerator, Nylon Body With **Silicon Membrane**, External Mount, Pack Of 4, Avon 70501-634 Pc50 Full Face Assembly, Twin Port, S ...

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[www.smartechonline.com/silicone-membranes](#)
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X-ray filter

From Wikipedia, the free encyclopedia
(Redirected from X-Ray Filters)

An **X-ray filter** is a device to block or filter out some or all wavelengths in the X-ray spectrum.

X-ray filters are used to block low-energy X-rays during medical x-ray imaging (radiography). Low energy X-rays are more likely to be absorbed by the patient's soft tissues. This causes non-stochastic radioactive effects, and does not contribute to image quality.

X-ray filters are also used in X-ray crystallography, where crystalline lattice spacings can be determined using Bragg diffraction. The filters allow only a single X-ray wavelength to penetrate through to a target crystal, allowing the resulting scattering to determine the diffraction distance.

Various elemental effects

Suitable for X-ray crystallography:

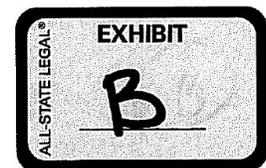
- Zirconium - Absorbs Bremsstrahlung & K-Beta.
- Iron - Absorbs the entire spectra.
- Molybdenum - Absorbs Bremsstrahlung - Leaving K-Beta & K-Alpha.
- Aluminium - 'Pinches' Bremsstrahlung* & Removes 3rd Generation peaks.
- Silver - Same as Aluminium, But to greater extent.
- Indium - Same as Iron, But to lesser extent.
- Copper - Same as Aluminium, Leaving only 1st Generation Peaks.

Suitable for Radiography:

- Molybdenum - Used in Mammography
- Rhodium - Used in Mammography with Rhodium anodes
- Aluminium - Used in general radiography x-ray tubes
- Copper - Used in general radiography - especially in paediatric applications.
- Silver - Used in Mammography with tungsten anode
- Tantalum - Used in fluoroscopy applications with tungsten anodes
- Niobium - Used in radiography and dental radiography with tungsten anodes
- Erbium - Used in radiography with tungsten anodes

Notes:

- - Bremsstrahlung pinching is due to the atomic mass. The denser the atom, the higher the X-Ray Absorption. Only the higher energy X-Rays pass through the filter, appearing as if the Bremsstrahlung continuum had been pinched.
- - In this case, Mo appears to leave K-Alpha and K-Beta alone while absorbing the Bremsstrahlung. This is due to Mo absorbing all of the spectra's energy, but in doing so produces the same characteristic peaks as generated by the target.



See also

- X-ray crystallography
- X-rays
- Bragg diffraction

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Categories: X-rays | Physics stubs

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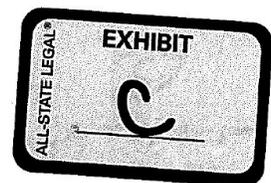
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