

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5568153

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT	
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
	<b>Name</b>	<b>Execution Date</b>
	TRIBOGENICS, INC.	12/18/2017
<b>RECEIVING PARTY DATA</b>		
<b>Name:</b>	TRIBOGENICS (ABC), LLC	
<b>Street Address:</b>	2735 SAND HILL ROAD	
<b>Internal Address:</b>	SUITE 205	
<b>City:</b>	MENLO PARK	
<b>State/Country:</b>	CALIFORNIA	
<b>Postal Code:</b>	94025	
<b>PROPERTY NUMBERS Total: 1</b>		
	<b>Property Type</b>	<b>Number</b>
	Application Number:	15996274
<b>CORRESPONDENCE DATA</b>		
<b>Fax Number:</b>	(949)955-1921	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>		
<b>Phone:</b>	949-955-1920	
<b>Email:</b>	maribelboyan@koslaw.com	
<b>Correspondent Name:</b>	KLEIN, O'NEILL & SINGH, LLP	
<b>Address Line 1:</b>	16755 VON KARMAN AVENUE	
<b>Address Line 2:</b>	SUITE 275	
<b>Address Line 4:</b>	IRVINE, CALIFORNIA 92606	
<b>ATTORNEY DOCKET NUMBER:</b>	1658-008.203	
<b>NAME OF SUBMITTER:</b>	DANIEL M. CAVANAGH	
<b>SIGNATURE:</b>	/Daniel M. Cavanagh/	
<b>DATE SIGNED:</b>	06/12/2019	
<b>Total Attachments: 12</b>		
source=1658--Assignment Tribogenics to ABC#page1.tif		
source=1658--Assignment Tribogenics to ABC#page2.tif		
source=1658--Assignment Tribogenics to ABC#page3.tif		
source=1658--Assignment Tribogenics to ABC#page4.tif		

source=1658--Assignment Tribogenics to ABC#page5.tif  
source=1658--Assignment Tribogenics to ABC#page6.tif  
source=1658--Assignment Tribogenics to ABC#page7.tif  
source=1658--Assignment Tribogenics to ABC#page8.tif  
source=1658--Assignment Tribogenics to ABC#page9.tif  
source=1658--Assignment Tribogenics to ABC#page10.tif  
source=1658--Assignment Tribogenics to ABC#page11.tif  
source=1658--Assignment Tribogenics to ABC#page12.tif

## PATENT ASSIGNMENT AGREEMENT

This PATENT ASSIGNMENT AGREEMENT is made effective as of December 18, 2017, by and between TRIBOGENICS, INC. a Delaware Corporation ("Assignor"), and TRIBOGENICS (ABC), LLC a California limited liability company, as Assignee for the Benefit of Creditors of Tribogenics, Inc., ("Assignee"), pursuant to a certain General Assignment Agreement dated as of December 18, 2017, (the "Assignment Agreement"). Capitalized terms used without definitions herein shall have the meanings ascribed to such terms in the Assignment Agreement.

WHEREAS, Assignor has agreed to sell to Assignee, and Assignee has agreed to acquire from Assignor, all of Assignor's rights, title and interest in all patents and patent applications owned by Assignor, including those patents and patent applications identified in Schedule A attached herein ("Assigned Patents"); and

WHEREAS, the parties accordingly wish to execute this recordable instrument, assigning all of Assignor's right, title and interest in and to the Assigned Patents to Assignee;

NOW, THEREFORE, for valuable consideration set forth in the Assignment Agreement, the receipt and sufficiency of which are hereby acknowledged, Assignor and Assignee agree as follows:

1. Assignor hereby assigns, transfers, and sets over to Assignee, and its lawful successors and assigns, the Assignor's entire right, title, and interest throughout the world in and to the Assigned Patents, together with all rights to the inventions described or claimed therein, and all divisions, continuations and continuations-in-part thereof, and all Letters Patent of the United States which may be granted thereon, and all reissues thereof, and all rights to claim priority therefrom, and all applications for Letters Patent which may hereafter be filed for this invention in any foreign country and all Letters Patent which may be granted on this invention in any foreign country, and all extensions, renewals, and reissues, thereof and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States and any official of any foreign country whose duty it is to issue patents on applications as described above, to issue all Letters Patent for any invention disclosed and claimed in any Assigned Patent to Assignee, its successors and assigns, in accordance with the terms of this Patent Assignment Agreement.

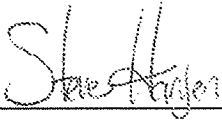
2. Assignor further assigns to Assignee all rights to sue and recover for any past, present or future actions, causes of action and rights to recover damages or payments (including lost profits), for infringement or misappropriations of any Assigned Patent, as well as the right to take over and continue any and all existing suits related to any Assigned Patent.

3. This Patent Assignment Agreement is subject to the terms and conditions of the Assignment Agreement and this Patent Assignment Agreement shall not be deemed to limit, enlarge or extinguish any obligation of Assignor or Assignee under the Assignment Agreement, all of which obligations shall survive the delivery of this Patent Assignment Agreement in accordance with the terms of the Assignment Agreement, and that to the extent there is any conflict between this Patent Assignment Agreement and the terms and conditions of the Assignment Agreement, the Assignment Agreement shall control.

4. This Patent Assignment Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

**ASSIGNOR:**

TRIBOGENICS, INC. a Delaware Corporation

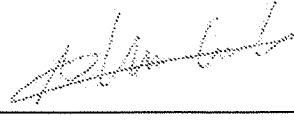
By: 

Name: Steven Hansen

Title: CEO

**ASSIGNEE:**

TRIBOGENICS (ABC), LLC a California  
Limited Liability Company, as Assignee for  
the Benefit of Creditors of Tribogenics, Inc.

By: 

Name: Andries Verschelden

Its: Manager

Schedule A  
To Patent Assignment Agreement  
Assigned Patents

## TRIBOGENICS PATENT SUMMARY

### Tribogenics Owned Patent Properties

#### 1. X-Ray Generator Device

This patent discusses several methods to generate X-rays from a tapping geometry. It includes a resonant spring system that allows for high efficiency and simple design. In general, the discussion is of the use of magnetically coupled motion to generate X-rays inside a sealed vacuum chamber.

<u>Country</u>	<u>Title</u>	<u>Status,</u> <u>Filing Date,</u> <u>App. Serial No.</u> <u>Pub. No. &amp; Date</u>	<u>Pat/Reg No.,</u> <u>Issue/Reg Date</u>	<u>Status</u>
US	X-RAY GENERATOR DEVICE	Issued Filed: 03/27/2012 Serial #: 13/431,473	Issued: 01/20/2015 Pat. #: 8,938,048	Issued
US	X-RAY GENERATOR DEVICE	Issued Filed: 12/17/2014 Serial #: 14/574,131	Issued: 02/09/2016 Pat. #: 9,258,874	Issued
US	X-RAY GENERATOR DEVICE	Pending Filed: 02/04/2016 Serial #: 15/015,516		Awaiting Patent Office Processing
PCT	X-RAY GENERATOR DEVICE	National Stage Filed: 03/22/2013 Serial #: PCT/US13/33536		
EPO	X-RAY GENERATOR DEVICE	Pending Filed: 10/27/2014 Serial #: 13767356.2		Awaiting Patent Office Processing

#### 2. Friction Driven X-ray Source

This patent discusses in general the use of sliding friction to generate X-rays. It includes several different embodiments and unique capabilities regarding control of the output. This invention allows for dual energy X-ray devices.

<u>Country</u>	<u>Title</u>	<u>Status,</u> <u>Filing Date,</u> <u>App. Serial No.</u> <u>Pub. No. &amp; Date</u>	<u>Pat/Reg No.,</u> <u>Issue/Reg Date</u>	<u>Status</u>
US	FRICTION DRIVEN X-RAY SOURCE	Issued Filed: 06/14/2012 Serial #: 13/523,551	Issued: 12/08/2015 Pat. #: 9,208,985	Issued
US	FRICTION DRIVEN X-RAY SOURCE	Pending Filed: 12/03/2015 Serial #: 14/958,077		Awaiting Patent Office Processing
PCT	FRICTION DRIVEN X-RAY SOURCE	National Stage Filed: 06/12/2013 Serial #: PCT/US13/ 45473		
Taiwan	FRICTION DRIVEN X-RAY SOURCE	Issued Filed: 06/14/2013 Serial #: 102121242	Issued: 07/01/2015 Pat. #: I490908	Issued

Brazil	FRICTION DRIVEN X-RAY SOURCE	Pending Filed: 12/12/2014 Serial #: 112014031179-0		Awaiting Patent Office Processing
China	FRICTION DRIVEN X-RAY SOURCE	Issued Filed: 12/15/2014 Serial #: 201380031610.1	Issued: 04/05/2017 Pat. #: ZL201380031610.1	Issued
EPO	FRICTION DRIVEN X-RAY SOURCE	Pending Filed: 12/18/2014 Serial #: 13804307.0		Awaiting Patent Office Processing
Russia	FRICTION DRIVEN X-RAY SOURCE	Issued Filed: 1/13/2015 Serial #: 2015100932	Issued: Pat. #: 2600326	Issued

### 3. Electron Excited X-ray Fluorescence Device

This patent discusses in general the use contact electrification to generate electrons so that they impact a sample under vacuum generating X-ray fluorescence. The result is an efficient excitation of the sample, which enables higher signal XRF. This device uses a vacuum pump so that the sample can be placed and evacuated before analysis. This invention could lead to a high-resolution briefcase sized device.

<u>Country</u>	<u>Title</u>	<u>Status,</u> <u>Filing Date,</u> <u>App. Serial No.</u> <u>Pub. No. &amp; Date</u>	<u>Pat/Reg No.,</u> <u>Issue/Reg Date</u>	<u>Status</u>
US	ELECTRON EXCITED X-RAY FLUORESCENCE DEVICE	Issued Filed: 11/07/2012 Serial #: 13/671,238	Issued: 01/26/2016 Pat. #: 9,244,028	Issued
US	ELECTRON EXCITED X-RAY FLUORESCENCE DEVICE	Issued Filed: 01/21/2016 Serial #: 15/003,571	Issued: 06/06/2017 Pat. #: 9,671,355	Issued
PCT	ELECTRON EXCITED X-RAY FLUORESCENCE DEVICE	National Stage Filed: 11/07/2013 Serial #: PCT/US13/068997		
EPO	ELECTRON EXCITED X-RAY FLUORESCENCE DEVICE	Pending Filed: 05/29/2015 Serial #: 13853404.5		Awaiting Patent Office Processing

### 4. Continuous Contact X-ray Source

This patent discusses in general a band driven charging and discharging device. The invention can be used for high-energy X-ray devices. The patent includes many embodiments and uses of the technology including for eXRF.

<u>Country</u>	<u>Title</u>	<u>Status,</u> <u>Filing Date,</u> <u>App. Serial No.</u> <u>Pub. No. &amp; Date</u>	<u>Pat/Reg No.,</u> <u>Issue/Reg Date</u>	<u>Status</u>
US	CONTINUOUS CONTACT X-RAY SOURCE	Issued Filed: 03/15/2013 Serial #: 13/844,128	Issued: 04/14/2015 Pat. #: 9,008,277	Issued
US	CONTINUOUS CONTACT X-RAY SOURCE	Issued Filed: 04/06/2015 Serial #: 14/679,776	Issued: 08/08/2017 Pat. #: 9,728,369	Issued

US	CONTINUOUS CONTACT X-RAY SOURCE	Pending Filed: 07/17/2017 Serial #: 15/652,102		Awaiting Patent Office Processing
PCT	CONTINUOUS CONTACT X-RAY SOURCE	National Stage Filed: 03/13/2014 Serial #: PCT/US2014/027762		
BR	CONTINUOUS CONTACT X-RAY SOURCE	Pending Filed: 9/14/2015 Serial #: 112015023455-0		Awaiting Patent Office Processing
CN	CONTINUOUS CONTACT X-RAY SOURCE	Issued Filed: 9/30/2015 Serial #: 201480019698.X	Issued: 08/22/2017 Pat. #: ZL 201480019698. X	Issued
JP	CONTINUOUS CONTACT X-RAY SOURCE	Issued Filed: 9/14/2015 Serial #: 2016-502535	Issued: 08/10/2017 Pat. #: 6188911	Issued
EPO	CONTINUOUS CONTACT X-RAY SOURCE	Pending Filed: 9/28/2015 Serial #: 14763409.1		Awaiting Patent Office Processing
RU	CONTINUOUS CONTACT X-RAY SOURCE	Issued Filed: 10/14/2015 Serial #: 2015143830	Issued: 07/06/2017 Pat. #: 2624733	Issued
ZA	CONTINUOUS CONTACT X-RAY SOURCE	Pending Filed: 10/05/2015 Serial #: 2015/07361		Awaiting Patent Office Processing

## 5. Compact X-ray Generation Device

This patent discusses in general a compact friction-driven X-ray source with no vacuum chamber moving parts. In this invention the tribocharging takes place in a different volume than the discharge. The disclosure includes the use of field emitting tips.

<u>Country</u>	<u>Title</u>	<u>Status,</u> <u>Filing Date,</u> <u>App. Serial No.</u> <u>Pub. No. &amp; Date</u>	<u>Pat/Reg No.,</u> <u>Issue/Reg Date</u>	<u>Status</u>
US	COMPACT X-RAY GENERATION DEVICE	Issued Filed: 03/15/2013 Serial #: 13/839,494	Issued: 10/27/2015 Pat. #: 9,173,279	Issued
US	COMPACT X-RAY GENERATION DEVICE	Pending Filed: 10/08/2015 Serial #: 14/878,795		Awaiting Patent Office Processing
PCT	COMPACT X-RAY GENERATION DEVICE	National Stage Filed: 03/14/2014 Serial #: PCT/US2014/027795		
BR	COMPACT X-RAY GENERATION DEVICE	Pending Filed: 9/15/2015 Serial #: 112015023536-0		Awaiting Patent Office Processing
CN	COMPACT X-RAY GENERATION DEVICE	Issued Filed: 10/09/2015 Serial #: 201480020460.9	Issued: 08/11/2017 Pat. #: ZL 201480020460. 9	Issued
JP	COMPACT X-RAY GENERATION DEVICE	Pending Filed: 9/14/2015 Serial #: 2016-502627		Awaiting Patent Office Processing



EPO	COMPACT X-RAY GENERATION DEVICE	Pending Filed: 9/28/2015 Serial #: 14762828.3	Awaiting Patent Office Processing
RU	COMPACT X-RAY GENERATION DEVICE	Pending Filed: 10/14/2015 Serial #: 2015143828	Awaiting Patent Office Processing

## 6. Transmission X-ray Generator

This patent discusses in general friction-driven X-ray emitter architectures for use in X-ray transmission devices. This invention lends itself for fabrication of arrays and more efficient compact X-ray sources.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	TRANSMISSION X-RAY GENERATOR	Issued Filed: 03/15/2013 Serial #: 13/839,535	Issued: 8/9/2016 Pat. #: 9,412,553	Issued
US	TRANSMISSION X-RAY GENERATOR	Issued Filed: 07/13/2016 Serial #: 15/209,340	Issued: 8/29/2017 Pat. #: 9,748,068	Issued

## 7. Portable Head CT Scanner

This patent discusses a portable CT scanner for head and neck. It includes the concept of separating the circular assembly into two separate pieces that can be transported and assembled when needed.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	PORTABLE HEAD CT SCANNER	Issued Filed: 03/19/2014 Serial #: 14/219,846	Issued: 8/23/2016 Pat. #: 9,420,977	Issued
US	PORTABLE HEAD CT SCANNER	Pending Filed: 07/18/2016 Serial #: 15/212,854		Awaiting Patent Office Processing
PCT	PORTABLE HEAD CT SCANNER	National Stage Filed: 3/19/2015 Serial #: PCT/US2015/021549		
CN	PORTABLE HEAD CT SCANNER	Pending Filed: 11/10/2016 Serial #: 201580024501.6		Awaiting Patent Office Processing
EPO	PORTABLE HEAD CT SCANNER	Pending Filed: 10/14/2016 Serial #: 15765227.2		Awaiting Patent Office Processing

## 8. XRF Device With Transfer Assistant Module

This patent discusses a portable XRF instrument with connectivity to give metadata on the analyzed materials to the end user. It also discusses specific new functionality that a connected device can enable such as logging and reporting.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	Converted Filed: 07/30/2014 Serial #: 62/031,102		
US	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	Issued Filed: 07/30/2015 Serial #: 14/814,419	Issued: 9/19/2017 Pat. #: 9,766,191	Issued
US	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	Pending Filed: 08/28/2017 Serial #: 15/688,619		Awaiting Patent Office Processing
PCT	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	National Stage Filed: 07/30/2015 Serial #: PCT/US2015/043016		
CN	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	Pending Filed: 03/06/2017 Serial #: 201580047983.7		Awaiting Patent Office Processing
EPO	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	Pending Filed: 02/20/2017 Serial #: 15827687.3		Awaiting Patent Office Processing
JP	XRF DEVICE WITH TRANSFER ASSISTANCE MODULE	Pending Filed: 01/27/2017 Serial #: 2017-504718		Awaiting Patent Office Processing

## 9. X-ray Fluorescence Device Calibration

This patent discusses automatic calibration capabilities of a handheld XRF device.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	X-RAY FLUORESCENCE DEVICE CALIBRATION	Converted Filed: 05/20/2015 Serial #: 62/164,426		
US	X-RAY FLUORESCENCE DEVICE CALIBRATION	Pending Filed: 5/19/2016 Serial #: 15/159,722		Awaiting Patent Office Processing
PCT	X-RAY FLUORESCENCE DEVICE CALIBRATION	Pending Filed: 5/19/2016 Serial #: PCT/US2016/033361		National Applications Due 11/20/2017

## 10. X-ray Generator Device With Improved Field Emission

This patent discusses surface coatings for handheld XRF devices.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	X-RAY GENERATOR DEVICE WITH IMPROVED FIELD EMISSION	Converted Filed: 03/07/2016 Serial #: 62/304,880		
US	X-RAY GENERATOR DEVICE WITH IMPROVED FIELD EMISSION	Pending Filed: 03/07/2017 Serial #: 15/452,553		Awaiting Patent Office Processing
PCT	X-RAY GENERATOR DEVICE WITH IMPROVED FIELD EMISSION	Pending Filed: 03/07/2017 Serial #: PCT/US2017/021204		National Applications Due 09/07/2018

### **Tribogenics Exclusively Licensed Patent Properties**

#### **11. Mechanoluminescent X-ray Generator**

This patent discusses the generation of X-rays from the relative motion between two dissimilar surfaces under a controlled environment. The main claim embedded for example as a triboelectric system inside a vacuum chamber with a window suitable for transmission of X-rays. A specific embodiment is unwinding a spool of material, as is the case of peeling tape. This patent discloses the use of this effect to generate X-ray images and to obtain XRF.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	MECHANOLUMINESCENT X-RAY GENERATOR	Converted Filed: 02/11/2008 Serial #: 61/064,020		
US	MECHANOLUMINESCENT X-RAY GENERATOR	Converted Filed: 10/17/2008 Serial #: 61/136,961		
PCT	MECHANOLUMINESCENT X-RAY GENERATOR	National Stage Filed: 02/11/2009 Serial #: PCT/US09/33787		
US	MECHANOLUMINESCENT X-RAY GENERATOR	Issued Filed: 09/01/2010 Serial #: 12/863,728	Issued: 04/15/2014 Pat. #: 8,699,666	Issued
US	MECHANOLUMINESCENT X-RAY GENERATOR	Issued Filed: 01/10/2014 Serial #: 14/152,770	Issued: 07/05/2016 Pat. #: 9,386,674	Issued
EP	MECHANOLUMINESCENT X-RAY GENERATOR	Granted Filed: 02/11/2009 Serial #: 09711141.3	Issued: 11/09/2016 Pat. #: 2245635	Granted
EP	MECHANOLUMINESCENT X-RAY GENERATOR	Pending Filed: 02/11/2009 Serial #: 16197679.0		Awaiting Patent Office Processing

#### **12. A Triboelectric X-ray Source**

This patent discusses the generation of X-rays from repeated contact and separation of two materials in a controlled environment. It discusses the concept of building arrays of such sources for imaging and other applications. It also discusses many drive embodiments including piezo ceramics, solenoids, pneumatic and drive shafts.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	TRIBOELECTRIC X-RAY SOURCE	Converted Filed: 03/11/2011 Serial #: 61/451,694		
PCT	TRIBOELECTRIC X-RAY SOURCE	National Stage Filed: 03/09/2012 Serial #: PCT/US12/28581		
US	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 09/04/2013 Serial #: 14/003,227	Issued: 07/28/2015 Pat. #: 9,093,248	Issued
AU	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: 2012229248	Issued: 04/21/2016 Pat. #: AU2012229248	Issued
BR	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: BR112013023087.8	Issued: 12/06/2016 Pat. #: BR1120130230 87	Issued
CA	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 03/9/2012 Serial #: 2829621		Awaiting Patent Office Processing
EP	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 03/9/2012 Serial #: 12758042.1		Awaiting Patent Office Processing
IL	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 03/9/2012 Serial #: 228024		Awaiting Patent Office Processing
IN	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 03/9/2012 Serial #: 2587/KOLNP/2013		Awaiting Patent Office Processing
JP	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: 2013-557922	Issued: 05/24/2016 Pat. #: JP5922158	Issued
JP	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 04/13/2016 Serial #: 2016-080123	Issued: 07/26/2017 Pat. #: JP6169750	Issued
KR	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 03/9/2012 Serial #: 10-2013-7025203		Awaiting Patent Office Processing
MX	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: MX/a/2013/010435	Issued: 01/22/2015 Pat. #: 2013010435A	Issued
NZ	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: 614433	Issued: 07/31/2015 Pat. #: 61443312A	Issued
RU	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: 2013145489	Issued: 07/27/2016 Pat. #: RU2592636	Issued

SG	TRIBOELECTRIC X-RAY SOURCE	Issued Filed: 03/9/2012 Serial #: 2013067780	Issued: 04/21/2016 Pat. #: SG193375	Issued
ZA	TRIBOELECTRIC X-RAY SOURCE	Pending Filed: 03/9/2012 Serial #: 2013/06269		Awaiting Patent Office Processing

### 13. Method to Generate X-rays by Contact Electrification

This patent discusses the use of contacting rotating motion to generate X-rays. It covers in a general way the generation of X-rays from static friction. It includes discussion of a line source for use in imaging and the use of such a sources to obtain tomographic X-ray images.

<u>Country</u>	<u>Title</u>	<u>Status, Filing Date, App. Serial No. Pub. No. &amp; Date</u>	<u>Pat/Reg No., Issue/Reg Date</u>	<u>Status</u>
US	METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Converted Filed: 05/03/2011 Serial #: 61/482,031		
PCT	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	National Stage Filed: 05/03/2012 Serial #: PCT/US12/36310		
US	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 10/24/2013 Serial #: 14/113,782	Issued: 07/21/2015 Pat. #: 9,089,038	Issued
AU	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 05/3/2012 Serial #: 2012253860	Issued: 01/21/2016 Pat. #: AU2012253860	Issued
BR	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Pending Filed: 05/3/2012 Serial #: BR112013028127-8		Awaiting Patent Office Processing
CA	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Pending Filed: 05/3/2012 Serial #: 2834592		Awaiting Patent Office Processing
EP	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 05/3/2012 Serial #: 12781815.1	Issued: 07/12/2017 Pat. #: EP2705732	Issued
IL	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Pending Filed: 05/3/2012 Serial #: 229123		Awaiting Patent Office Processing
IN	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Pending Filed: 05/3/2012 Serial #: 3208/KOLNP/2013		Awaiting Patent Office Processing
JP	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Pending Filed: 05/3/2012 Serial #: 2014-509438		Awaiting Patent Office Processing
KR	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Pending Filed: 05/3/2012 Serial #: 10-2013-7030108		Awaiting Patent Office Processing
MX	METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 05/3/2012 Serial #: MX/a/2013/012826	Issued: 05/13/2015 Pat. #: 2013012826A	Issued

NZ	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 05/3/2012 Serial #: 617143	Issued: 10/30/2015 Pat. #: 61714312A	Issued
RU	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 05/3/2012 Serial #: 2013153408	Issued: 07/27/2016 Pat. #: RU2592636	Issued
SG	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 05/3/2012 Serial #: 2013080213	Issued: 05/13/2016 Pat. #: SG194686	Issued
ZA	APPARATUS AND METHOD TO GENERATE X-RAYS BY CONTACT ELECTRIFICATION	Issued Filed: 10/29/2013 Serial #: 2013/08072	Issued: 01/28/2015 Pat. #: ZA201308072	Issued