505199922 11/20/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5246691

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST

CONVEYING PARTY DATA

Name	Execution Date
SHINE MEDICAL TECHNOLOGIES, INC.	11/20/2018

RECEIVING PARTY DATA

Name:	DEERFIELD MANAGEMENT COMPANY, L.P.
Street Address:	780 THIRD AVENUE, 37TH FLOOR
City:	NEW YORK
State/Country:	NEW YORK
Postal Code:	10017

PROPERTY NUMBERS Total: 9

Property Type	Number
Application Number:	15644497
Application Number:	13575826
Application Number:	13460033
Application Number:	14390658
Application Number:	13373899
Application Number:	13692212
Application Number:	12882962
Application Number:	12810958
Application Number:	12990758

CORRESPONDENCE DATA

Fax Number: (704)378-4000

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.

Phone: 7043778156

Email: jcarusone@robinsonbradshaw.com

Correspondent Name: JENNIFER CARUSONE

Address Line 1: 101 N. TRYON ST., SUITE 1900

Address Line 2: ROBINSON, BRADSHAW & HINSON, P.A. Address Line 4: CHARLOTTE, NORTH CAROLINA 28246

ATTORNEY DOCKET NUMBER:	20046.00126
NAME OF SUBMITTER:	LIENNIFER CARLISONE

505199922 REEL: 047555 FRAME: 0830

SIGNATURE:	/Jennifer Carusone/
DATE SIGNED:	11/20/2018
Total Attachments: 11	
source=Deerfield - SHINE - Grant of Se	curity Interest in Patents and Trademarks#page1.tif
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source=Deerfield - SHINE - Grant of Security Interest in Patents and Trademarks#page11.tif

GRANT OF SECURITY INTEREST IN PATENTS AND TRADEMARKS

WHEREAS, SHINE MEDICAL TECHNOLOGIES, INC. (the "<u>Pledgor</u>") is the owner of the trademark applications and registrations listed on <u>Schedule A</u> attached hereto, (all such trademarks, registrations and applications, collectively, the "<u>Trademarks</u>") and is the owner of the patents and patent applications listed on <u>Schedule A</u> attached hereto (all such patents, registrations and applications, collectively, the "<u>Patents</u>"); and

WHEREAS, the Pledgor has entered into a Pledge and Security Agreement (as amended, modified, restated or supplemented from time to time, the "Security Agreement"), dated as of November 20, 2018, in which the Pledgor has agreed with Deerfield Management Company, L.P., as Collateral Agent (the "Collateral Agent"), with offices at 780 Third Avenue, 37th Floor, New York, New York 10017, to execute this Grant;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as security for the payment and performance of the Secured Obligations (as defined in the Security Agreement), the Pledgor does hereby grant to the Collateral Agent a security interest in all of its right, title and interest in and to the Trademarks and the Patents, and the use thereof, together with all proceeds and products thereof and the goodwill of the businesses symbolized by the Trademarks. This Grant has been given in conjunction with the security interest granted to the Collateral Agent under the Security Agreement, and the provisions of this Grant are without prejudice to and in addition to the provisions of the Security Agreement, which are incorporated herein by this reference.

[Remainder of page intentionally blank.]

SHINE MEDICAL TECHNOLOGIES, INC.

By:

Gregory Piefer Name:

Title: Chief Executive Officer

Schedule A

TRADEMARKS AND TRADEMARK APPLICATIONS

SHINE Medical Technologies, Inc.	Owner
SHINE Medical Technologies	Mark
5,193,642	Application or Registration No.
USA	Country
5/2/2017	Issue or Filing Date

PATENTS AND PATENT APPLICATIONS

DEVICE AND METHOD FOR PRODUCING SHINE MEDICAL Medical Gregory ISOTOPES Technologies Piefer Belg	DEVICE AND METHOD FOR PRODUCING SHINE MEDICAL Medical Gregory United ISOTOPES Technologies Piefer States	DEVICE AND METHOD FOR PRODUCING SHINE MEDICAL Medical Gregory United ISOTOPES Technologies Piefer States	Title Owner Inventor Country
Des Belgium EP	14		
Designated EP (Continuati on 1	nal from	CaseType
Granted	Published	Granted	Status
9739965.3	15/644,497	12/990,758	Application
5/1/2009	7/7/2017	5/1/2009	Filing Date/National Phase Entry Date
EP2294582 (A2) EP2294582 (B1)	US-2018- 0166179-A1	US-2011- 0096887-A1 9,734,926	Publication No./ Patent No.
3/16/2011 8/15/2018	6/14/2018	4/28/2011 8/15/2017	Publication/Gr ant Date

DEVICE AND METHOD FOR PRODUCING	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	IMPROVED DEVICE AND METHOD FOR PRODUCING NEUTRON GENERATED ISOTOPES FOR MEDICINE	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES
SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	PHOENIX NUCLEAR LABS LLC	SHINE Medical Technologies
Gregory Piefer	Gregory	Gregory	Gregory	Gregory	Gregory	Gregory
Spain	Europe	Germany (Federal Republic of)	Czechia	China	China	Canada
Designated EP	National phase filing from PCT	Designated EP	Designated EP	Divisional	National phase filing from PCT	National phase filing from PCT
Granted	Granted	Granted	Granted	Granted	Granted	Granted
9739965.3	09739965.3	9739965.3	9739965.3	20151097687	20098012345 2.6	2723224
5/1/2009	12/1/2010	5/1/2009	5/1/2009	12/23/2015	12/22/2010	11/2/2010
22945829A2 2294582B1	22945829A2 2294582B1	22945829A2 2294582B1	22945829A2 2294582B1	CN10557544 5A	CN10208443 4A ZL20098012 3452.6	2723224
3/16/2011 8/15/2018	3/16/2011 8/15/2018	3/16/2011 8/15/2018	3/16/2011 8/15/2018	5/11/2016 7/24/2018	6/1/2011 1/20/2016	9/25/2018

DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	IMPROVED DEVICE AND METHOD FOR PRODUCING NEUTRON GENERATED ISOTOPES FOR MEDICINE	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	MEDICAL ISOTOPES
SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	
Gregory Piefer	Gregory Piefer	Gregory	Gregory Piefer	Gregory Piefer	Gregory Piefer	
Italy	India	Hong	Hong Kong	United Kingdom	France	
Designated EP	National phase filing from PCT	Confirmati	Confirmati	Designated EP	Designated EP	
Granted	Application	Application	Granted	Granted	Granted	
9739965.3	4235/KOLNP /2010	16113017.4	11113063.2	9739965.3	9739965.3	
5/1/2009	11/11/2010	11/11/2016	12/1/2011	5/1/2009	5/1/2009	
22945829A2 2294582B1			1158811A 1158811	22945829A2 2294582B1	22945829A2 2294582B1	
3/16/2011 8/15/2018			7/20/2012 8/26/2016	3/16/2011 8/15/2018	3/16/2011 8/15/2018	

DEVICE AND METHOD FOR PRODUCING	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	IMPROVED DEVICE AND METHOD FOR PRODUCING NEUTRON GENERATED ISOTOPES FOR MEDICINE	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES			
SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies
Gregory Piefer	Gregory	Gregory	Gregory	Gregory	Gregory Picfer	Gregory Piefer
Turkey	Russia	Poland	Netherla nds	Korea	Japan	Japan
Designated EP	National phase filing from PCT	Designated EP	Designated EP	National phase filing from PCT	Divisional	National phase filing from PCT
Granted	Granted	Granted	Granted	Granted	Granted	Granted
9739965.3	2010148920	9739965.3	9739965.3	10-2010- 7027045	2013-249823	2011-507694
5/1/2009	12/2/2010	5/1/2009	5/1/2009	12/1/2010	5/1/2009	11/1/2010
22945829A2 2294582B1	2010148920 2494484	22945829A2 2294582B1	22945829A2 2294582B1	10-2011- 0031278 10-1673954	2014-44214 6130289	2011-522226 5793418
3/16/2011 8/15/2018	9/27/2013	3/16/2011 8/15/2018	3/16/2011 8/15/2018	3/25/2011 11/2/2016	3/13/2014 4/21/2017	7/28/2011 8/14/2015

METHOD	AND CONTROL	AQUEOUS ASSEMBLY	METHOD	AND CONTROL	ASSEMBLY	AQUEOUS	METHOD	AND CONTROL	ASSEMBLY	AQUEOUS	METHOD	AND CONTROL	ASSEMBLY	AQUEOUS	METHOD	AND CONTROL	ASSEMBLY	AQUEOUS	SOLUTIONS	URANIUM	FROM	ISOT OPES	MEDICAL	SEPAKALING	METHODS OF	PRODUCTION	RADIOISOTOPE	CHAMBER FOR	REACTION	SEGMENTED		1301 OF E3	MEDICAL
Technologies	Medical	SHINE	Technologies	Medical	SHINE		Technologies	Medical	SHINE		Technologies	Medical	SHINE		Technologies	Medical	SHINE		Technologies	Medical	SHINE					Technologies	Medical	SHINE					
Van Abel	Eric N.	Gregory Piefer	Van Abel	Eric N.	Piefer,	Gregory	Van Abel	Eric N.	Piefer,	Gregory	Van Abel	Eric N.	Piefer,	Gregory	Van Abel	Eric N.	Piefer,	Gregory	Piefer	Gregory						Mackie	Rockwell	Thomas	Piefer,	Gregory	1		
India			Kong	Hong			China				Canada				States	United			States	United						States	United						
PCT	filing from	National phase	on	Confirmati			PCT	filing from	phase	National	PCT	filing from	phase	National	PCT	filing from	phase	National	Secondary							PCT	filing from	phase	National				
Application			Application				Allowed				Application				Published				Published							Published							
/2014	9137/DELNP		15101968.9				5.4	20138001886			2869559				14/390,658				13/460,033							13/575,826							
10/31/2014			2/27/2015				3/15/2013				10/3/2014				3/15/2013				4/30/2012							1/28/2011							
			1201575A1				3A	CN10432162							0092900-A1	US-2015-			0300891-A1	US-2012-						0300890-A1	US-2012-						
							1/28/2015								4/2/2015				11/29/2012							11/29/2012							

APARATUS AND METHOD FOR GENERATING	APARATUS AND METHOD FOR GENERATING MEDICAL ISOTOPES	APARATUS AND METHOD FOR GENERATING MEDICAL ISOTOPES	APARATUS AND METHOD FOR GENERATING MEDICAL ISOTOPES	AQUEOUS ASSEMBLY AND CONTROL METHOD	AQUEOUS ASSEMBLY AND CONTROL METHOD
Wisconsin Alumni Research Foundation	Wisconsin Alumni Research	Wisconsin Alumni Research	Wisconsin Alumni Research Foundation and SHINE Medical Technologies	SHINE Medical Technologies	SHINE Medical Technologies
Gregory Piefer, Thad Heltemes	Gregory Picfer, Thad Heltemes , Ross , Radel, Eric Van Abel	Gregory Piefer, Thad Heltemes , Ross , Radel, Eric Van Abel	Gregory Piefer, Thad Heltemes , Ross Radel, Eric Van Abel	Gregory Piefer, Eric N. Van Abel	Gregory Piefer, Eric N. Van Abel
India	China	WIPO (IS PCT)	USA	Russia	Korea
				National phase filing from PCT	National phase filing from PCT
	Granted	Expired	Application	Granted	Published
4495/DELNP /2014	20128006736	PCT/US2012/ 066214	13/373,899	2014144290	10-2014- 7031068
11/23/2012	11/21/2012	11/21/2012	12/05/2011	3/15/2013	11/4/2014
	CN10432182 4A CN10432182	WO2013119	US20130142 296A1	2014144290 2649662	10-2015- 0023245
	1/28/2015		6/6/2013	5/27/2016 4/5/2018	3/5/2015

APPARATUS AND PROCESS FOR SEPARATING HYDROGEN ISOTOPES	DRY PHASE REACTOR FOR GENERATING MEDICAL ISOTOPES	DRY PHASE REACTOR FOR GENERATING MEDICAL ISOTOPES	APARATUS AND METHOD FOR GENERATING MEDICAL ISOTOPES	APARATUS AND METHOD FOR GENERATING MEDICAL ISOTOPES	MEDICAL ISOTOPES
Savannah River Nuclear Solutions, LLC	Wisconsin Alumni Research Foundation	Wisconsin Alumni Research Foundation	Wisconsin Alumni Research Foundation	Wisconsin Alumni Research Foundation	
Leung K. Heung, Henry T. Sessions, Xin Xiao	Thomas (Rock) Mackie, Thad Heltemes	Thomas (Rock) Mackie, Thad Heltemes	Gregory Piefer, Thad Heltemes , Ross , Radel, Eric Van	Gregory Piefer, Thad Heltemes , Ross , Radel, Eric Van Abel	, Ross Radel, Eric Van Abel
USA	WIPO (IS PCT)	USA	Russia	Japan	
Granted	Expired	Granted	Granted	Granted	
ed 12/882,		ed 13/6922			
962	PCT/US2013/	12	2014122587	2014-545927	
9/15/2010	11/19/2013	12/3/2012	11/21/2012	11/21/2012	
2012006088 8470073	WO20141266	20140153684 9330800	2014122587 A 2625342C2	2015510103 A 6236012B2	
3/15/2012 6/25/2013		6/5/2014 5/3/2016	1/27/2016 7/13/2017	4/2/2015 11/22/2017	

HIGH ENERGY PROTON OR	HIGH ENERGY PROTON OR NEUTRON SOURCE	HIGH ENERGY PROTON OR NEUTRON SOURCE	HIGH ENERGY PROTON OR NEUTRON SOURCE	HIGH ENERGY PROTON OR NEUTRON SOURCE	HIGH ENERGY PROTON OR NEUTRON SOURCE	HIGH ENERGY PROTON OR NEUTRON SOURCE	HIGH ENERGY PROTON OR NEUTRON SOURCE	PROCESS FOR SEPARATING HYDROGEN ISOTOPES
PHOENIX, LLC	PHOENIX NUCLEAR LABS, LLC	PHOENIX NUCLEAR LABS, LLC	PHOENIX,	PHOENIX NUCLEAR LABS, LLC	PHOENIX NUCLEAR LABS, LLC	PHOENIX NUCLEAR LABS, LLC	PHOENIX,	Savannah River Nuclear Solutions, LLC
Gregory Piefer	Gregory Piefer	Gregory Piefer	Gregory Piefer	Gregory Piefer	Gregory Piefer	Gregory Piefer	Gregory Piefer	Leung K. Heung, Henry T. Sessions, Xin Xiao
Patent Cooperat	Republic of Korea	Japan	India	Europe	China	Canada	USA	WIPO (IS PCT)
Expired	Granted	Granted		Granted	Granted	Granted	Granted	Expired
PCT/US2008/	10-2010- 7016871	2010-540933	2615/KOLNP /2010	08874437.0	20088012569 4.4	2710985	12/810,958	PCT/US2011/ 001606
12/29/2008	7/27/2010	6/24/2010	7/16/2010	7/28/2010	7/27/2010	6/28/2010	12/29/2008	9/15/2011
WO20091426	KR20100103 652A KR10159168 8B1	JP201150888 5A JP5653757B2		EP2236016A 2 EP2236016B	CN10195289 9A CN10195289 9B	CA2710985A 1 CA2710985C	20100284502 8837662	WO2012036
	9/27/2010 2/4/2016	3/17/2011 1/14/2015		10/6/2010	1/19/2011	3/21/2017	11/11/2010 9/16/2014	

APARATUS AND METHOD FOR GENERATING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	DEVICE AND METHOD FOR PRODUCING MEDICAL ISOTOPES	HIGH ENERGY PROTON OR NEUTRON SOURCE	NEUTRON SOURCE
Wisconsin Alumni Research	SHINE Medical Technologies	SHINE Medical Technologies	PHOENIX,	
Gregory Piefer, Thad Heltemes , Ross Radel, Eric Van Abel	Gregory	Gregory	Gregory Piefer	
China	Korea	Japan	Russian Federatio	ion Treaty
	National phase filing from PCT	National phase filing from PCT		
Published	Published	Published	Granted	
20171000374	20167015856	2016-249660	2010126346	
11/21/2012	5/1/2009	12/22/2016	7/28/2010	
CN10708605	KR 20160072846 A	2017053872 A	RU20101263 46A RU2496285C 2	
8/22/2017	6/23/2016	3/16/2017	2/10/2012 10/20/2013	

RECORDED: 11/20/2018