

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4947667

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
OB REALTY, LLC	01/16/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	BEAMREACH-SOLEXEL ASSETS, LLC
<b>Street Address:</b>	198 CINNABAR LANE
<b>City:</b>	YARDLEY
<b>State/Country:</b>	PENNSYLVANIA
<b>Postal Code:</b>	19067
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	14991772
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(215)542-5825
<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>	215-542-5824
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<b>Correspondent Name:</b>	HOWARD IP LAW GROUP, PC
<b>Address Line 1:</b>	PO BOX 226
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<b>ATTORNEY DOCKET NUMBER:</b>	038USN0C1
<b>NAME OF SUBMITTER:</b>	ELLEN M. DRAEGERT
<b>SIGNATURE:</b>	/Ellen M. Draegert/
<b>DATE SIGNED:</b>	05/04/2018
<b>Total Attachments: 31</b>	
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**EXHIBIT A**

**PATENT ASSET ASSIGNMENT**

This Patent Asset Assignment (the "**Assignment**") is made as of January 16, 2018, by and between OB Realty, LLC (the "**Seller**"), and Beamreach-Solexel Assets LLC., a Delaware limited liability corporation (the "**Buyer**"), with principal offices located at 198 Cinnabar Lane, Yardley, PA 19067. Seller and Buyer are parties to a certain Patent Monetization Framework Agreement dated as of January 16, 2018 (the "**Framework Agreement**").

1. **Assignment of Purchased Assets.** In accordance with and subject to the terms and conditions set forth in the Framework Agreement, for good and valuable consideration defined therein, the receipt of which is hereby acknowledged, Seller does **hereby** sell, assign, transfer, convey and deliver unto Buyer all right, title and interest of Seller in and to the Purchased Assets (as more particularly described on Schedule A hereto, the "Purchased Assets").

2. **Cooperation.** Buyer and Seller agree to cooperate with each other to execute and deliver such other documents and instruments and to do such further acts and things as may be reasonably requested by the other to evidence, document or carry out the sale of the Purchased Assets.

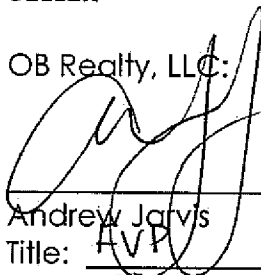
3. **Effect of Agreement.** Nothing in this Assignment shall, or shall be deemed to, modify or otherwise affect any provisions of the Framework Agreement or affect the rights of the parties under the Framework Agreement. In the event of any conflict between the provisions hereof and the provisions of the Framework Agreement with respect to the subject matter thereof, the provisions of the Framework Agreement shall govern and control.

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**IN WITNESS WHEREOF**, Seller and Buyer have caused this Assignment to be executed on the date first written above.

**SELLER**

OB Realty, LLC:

  
\_\_\_\_\_  
Andrew Jarvis

Title: AVP

Dated: 23<sup>th</sup> day of January, 2018

**BUYER**

Beamreach-Solexel Assets LLC:

  
\_\_\_\_\_  
Daryl Martin

On behalf of Member  
IPmetrics LLC

  
\_\_\_\_\_

David Shoneman  
On behalf of Member  
Darwin IP Advisors LLC

## SCHEDULE A

### Purchased Assets

The Purchased Assets include the patents and patent applications listed below and any patent or patent application that was transferred via the Foreclosure Bill of Sale, whether or not listed on Schedule A, including reissues, divisions, continuations, continuations-in-part and extensions thereof and reexamination certificates therefore, all corresponding family members, including all foreign counterparts.

CNTRY CODE	APPLICATION OR SERIAL NUMBER	PATENT NUMBER	TITLE
CN	200780045506.2		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
EP	07868383.6		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
IN	1756/KOLNP/2009		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
JP	2009-532512	5528809	Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
US	11/868,488	8,129,822	Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
US	12/879,871		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
US	13/099,825		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
US	13/099,837		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
US	13/345,861		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
US	60/828,678		High-Performance, Three-Dimensional (3D) Thin-Film, Solar Cell Device Structures, Fabrication Processes, and Mass Manufacturing Methods, as well as Solar Module Structures and Assembly Methods Using Such 3D Solar Cells
US	60/886,303		Low-Cost, High-Efficiency, Lightweight, Three-Dimensional (3-D), Prism-Array, Thin-Film Solar Cells and Manufacturing Methods, as well as Solar Module Structures and Assembly Methods Using Such Solar Cells
WO	PCT/US2007/080654		Template For Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use

US	11/868,489		High-Performance, Three-Dimensional (3D) Thin-Film, Solar Cell Device Structures, Fabrication Processes, and Mass Manufacturing Methods, as well as Solar Module Structures and Assembly Methods Using Such 3D Solar Cells
US	12/767,791		Shadow Mask Methods For Manufacturing Three-Dimensional Thin-Film Solar Cells
WO	PCT/US2007/080655		Methods For Manufacturing Three-Dimensional Thin-Film Solar Cells
US	11/868,490	8,084,684	Three-Dimensional Thin-Film Solar Cells
US	13/355,237	8,324,499	Three-Dimensional Thin-Film Solar Cells
US	13/692,599	9,349,887	Three-Dimensional Thin-Film Solar Cells
WO	PCT/US2007/080656		Three-Dimensional Thin-Film Solar Cells
US	11/868,491	7,999,174	Solar Module Structures And Assembly Methods For Three-Dimensional Thin-Film Solar Cells
US	13/187,291	8,742,249	Solar Module Structures And Assembly Methods For Three-Dimensional Thin-Film Solar Cells
US	14/293,876		Solar Module Structures And Assembly Methods For Three-Dimensional Thin-Film Solar Cells
US	15/602,906		Solar Module Structures And Assembly Methods For Three-Dimensional Thin-Film Solar Cells
WO	PCT/US2007/080657		Solar Module Structures And Assembly Methods For Three-Dimensional Thin-Film Solar Cells
US	11/841,629	7,786,376	High Efficiency Solar Cell
US	60/823,200		High Efficiency Solar Cell
US	11/868,492		Template For Pyramidal Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
WO	PCT/US2007/080658		Template For Pyramidal Three-Dimensional Thin-Film Solar Cell Manufacturing And Methods Of Use
CN	200780045520.2	ZL200780045520.2	Pyramidal Three-Dimensional Thin-Film Solar Cells
EP	07868386.9		Pyramidal Three-Dimensional Thin-Film Solar Cells
IN	1725/KOLNP/2009		Pyramidal Three-Dimensional Thin-Film Solar Cells
JP	2009-532513	5519285	Pyramidal Three-Dimensional Thin-Film Solar Cells
JP	2014-076786	5739037	Pyramidal Three-Dimensional Thin-Film Solar Cells
US	11/868,493	8,035,028	Pyramidal Three-Dimensional Thin-Film Solar Cells
US	13/188,156		Pyramidal Three-Dimensional Thin-Film Solar Cells
WO	PCT/US2007/080659		Pyramidal Three-Dimensional Thin-Film Solar Cells
US	11/868,494	8,035,027	Solar Module Structures And Assembly Methods For Pyramidal Three-Dimensional Thin-Film Solar Cells
US	13/188,303	8,847,060	Solar Module Structures And Assembly Methods For Pyramidal Three-Dimensional Thin-Film Solar Cells
US	14/500,757		Structures And Fabrication Methods For Solar Cells And Modules
WO	PCT/US2007/080660		Solar Module Structures And Assembly Methods For Pyramidal Three-Dimensional Thin-Film Solar Cells
EP	10749454.4		Method For Releasing A Thin-Film Substrate
US	12/473,811	7,745,313	Substrate Release Methods And Apparatus
US	12/719,766	8,293,558	Method For Releasing A Thin-Film Substrate
US	12/826,641	8,193,076	Method For Releasing A Thin Semiconductor Substrate From A Reusable Template

US	13/463,757	9,397,250	A Releasing Apparatus For Separating A Semiconductor Substrate From A Semiconductor Template
US	15/212,447		Methods For Releasing A Semiconductor Substrate From A Template
US	13/657,718		Method For Releasing A Thin-Film Substrate
US	61/056,722		Substrate Release Methods And Apparatus
WO	PCT/US2010/026570		Method For Releasing A Thin-Film Substrate
US	12/193,415	8,512,581	Methods For Liquid Transfer Coating Of Three-Dimensional Substrates
US	13/942,150	9,093,323	Methods For Selectively Coating Three-Dimensional Features On A Substrate
US	14/810,417		Methods For Selectively Coating Three-Dimensional Features On A Substrate
US	60/956,388		Liquid Transfer Coating Apparatus and Methods
US	PCT/US2008/073499		Methods For Liquid Transfer Coating Of Three-Dimensional Substrates
US	12/477,095		Alternate Use For Low Viscosity Liquids And Method To Gel Liquid
US	12/626,363		Alternate Use For Low Viscosity Liquids And Method To Gel Liquid
US	61/007,549		Alternate Use For Low Viscosity Liquids And Method To Gel Liquid
US	12/477,094		Method And Apparatus To Transfer Coat Uneven Surface
US	12/620,162		Method And Apparatus To Transfer Coat Uneven Surface
US	61/195,620		Method And Apparatus To Transfer Coat Uneven Surface
US	61/077,259		Alternate Use For Low Viscosity Liquids And Method To Gel Liquid
US	61/077,418		Method And Apparatus To Transfer Coat Uneven Surface
US	61/158,223		Method And Apparatus For Releasing Thin-Film Silicon Substrates
DE	09826880.8	EP2356675	Methods And Systems For Manufacturing Thin-Film Solar Cells (Validated in DE FR GB & NL)
EP	09826880.8	EP2356675	Methods And Systems For Manufacturing Thin-Film Solar Cells (Validated in DE FR GB & NL)
FR	09826880.8	EP2356675	Methods And Systems For Manufacturing Thin-Film Solar Cells (Validated in DE FR GB & NL)
GB	09826880.8	EP2356675	Methods And Systems For Manufacturing Thin-Film Solar Cells (Validated in DE FR GB & NL)
NL	09826880.8	EP2356675	Methods And Systems For Manufacturing Thin-Film Solar Cells (Validated in DE FR GB & NL)
US	12/618,649	8,168,465	Three-Dimensional Semiconductor Template For Making High Efficiency Thin-Film Solar Cells
US	13/345,935	8,664,737	Three-Dimensional Semiconductor Template For Making High Efficiency Thin-Film Solar Cells

US	14/195,748	9,590,035	Three-Dimensional Semiconductor Template For Making High Efficiency Solar Cells
US	61/114,378		Re-Usable Crystallographically-Etched Silicon Template For Making Three-Dimensional Thin-Film Solar Cells
WO	PCT/US2009/064484		Methods And Systems For Manufacturing Thin-Film Solar Cells
US	09829825.0		Truncated Pyramid Structures For See-Through Solar Cells
MY	PI2011002341		Truncated Pyramid Structures For See-Through Solar Cells
US	12/626,778	8,053,665	Truncated Pyramid Structures For See-Through Solar Cells
US	13/010,655		Truncated Pyramid Structures For See-Through Solar Cells
US	13/193,302	8,853,521	Truncated Pyramid Structures For See-Through Solar Cells
US	14/507,786		Truncated Pyramid Structures For See-Through Solar Cells
US	61/118,243		Truncated Pyramid Structures For See-Through Solar Cells
WO	PCT/US2009/066011		Truncated Pyramid Structures For See-Through Solar Cells
US	12/728,772	8,828,517	Structure And Method For Improving Solar Cell Efficiency And Mechanical Strength
US	14/479,523		Structure And Method For Improving Solar Cell Efficiency And Mechanical Strength
US	61/162,546		Structure And Method For Improving Solar Cell Efficiency And Mechanical Strength Using Variable Aperture Size And Wall Thickness
DE	10732153.1	EP2387458	Porous Silicon Electro-Etching System And Method (Validated in DE DK FR GB & NL)
DK	10732153.1	EP2387458	Porous Silicon Electro-Etching System And Method (Validated in DE DK FR GB & NL)
EP	10732153.1	EP2387458	Porous Silicon Electro-Etching System And Method (Validated in DE DK FR GB & NL)
FR	10732153.1	EP2387458	Porous Silicon Electro-Etching System And Method (Validated in DE DK FR GB & NL)
GB	10732153.1	EP2387458	Porous Silicon Electro-Etching System And Method (Validated in DE DK FR GB & NL)
JP	2011-546393		Porous Silicon Electro-Etching System And Method
MY	PI2011003342		Porous Silicon Electro-Etching System And Method
NL	10732153.1	EP2387458	Porous Silicon Electro-Etching System And Method (Validated in DE DK FR GB & NL)
US	12/688,495	8,926,803	Porous Silicon Electro-Etching System And Method
US	14/589,667		Porous Silicon Electro-Etching System And Method
US	14/589,847	TBD	Porous Silicon Electro-Etching System And Method
US	61/145,018		Porous Silicon Electro-Etching System And Method
WO	PCT/US2010/021209		Porous Silicon Electro-Etching System And Method
CN	201080060493.8		Structures And Methods For High-Efficiency Pyramidal Three-Dimensional Solar Cells



EP	10830677.0		Structures And Methods For High-Efficiency Pyramidal Three-Dimensional Solar Cells
US	12/615,383	8,937,243	Structures And Methods For High-Efficiency Pyramidal Three-Dimensional Solar Cells
US	14/601,123	9,595,622	Structures And Methods For High-Efficiency Pyramidal Three-Dimensional Solar Cells
WO	PCT/US2010/056264		Structures And Methods For High-Efficiency Pyramidal Three-Dimensional Solar Cells
EP	10739242.5		Trench Formation Method For Releasing A Thin-Film Substrate From A Reusable Semiconductor Template
MY	PI2011700122		Trench Formation Method For Releasing A Thin-Film Substrate From A Reusable Semiconductor Template
US	12/702,187	8,278,192	Trench Formation Method For Releasing A Thin-Film Substrate From A Reusable Semiconductor Template
US	13/633,723	9,343,299	Trench Formation Method For Releasing A Substrate From A Semiconductor Template
US	15/156,286		Trench Formation Method For Releasing A Substrate From A Semiconductor Template
US	61/150,392		Methods Of Making Trenches For Defining And Releasing Structured Thin-Film Substrates From Re-Usable Semiconductor Templates
WO	PCT/US2010/023514		Trench Formation Method For Releasing A Thin-Film Substrate From A Reusable Semiconductor Template
US	61/162,830		Self-Supporting Three Dimensional Thin Film Semiconductor Substrate
CN	201080021690.9	ZL201080021690.9	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor
DE	10765064.0	EP2419306	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor (Validated in DE FR GB & NL)
EP	10765064.0	EP2419306	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor (Validated in DE FR GB & NL)
FR	10765064.0	EP2419306	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor (Validated in DE FR GB & NL)
GB	10765064.0	EP2419306	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor (Validated in DE FR GB & NL)
MY	PI2011004789		High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor
NL	10765064.0	EP2419306	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor (Validated in DE FR GB & NL)
US	12/759,820	8,656,860	High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor
US	61/169,139		High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor
WO	PCT/US2010/030991		High Efficiency Epitaxial Chemical Vapor Deposition (Cvd) Reactor
US	12/767,512	9,099,584	Integrated Three-Dimensional And Planar Metallization Structure For Thin Film Solar Cells
US	14/817,038		Integrated Three-Dimensional And Planar Metallization Structure For Thin Film Solar Cells

US	61/172,335		Integrated 3-Dimension And Planar Metallization Structure For Thin Film Solar Cells
US	61/172,275		Shadow Mask Nitride For Forming Selective Back Side And Front Side Contacts
US	12/786,262	8,445,314	Method Of Creating Reusable Template For Detachable Thin Film Substrate
US	13/897,323	9,053,957	Structure And Method For Creating A Reusable Template For Detachable Thin Film Substrates
US	14/733,758		Structure And Method For Creating A Reusable Template For Detachable Thin Film Substrates
US	61/180,623		Method Of Creating Reusable Template For Detachable Thin Film Substrate
CN	201080030023.7	ZL201080030023.7	High-Productivity Porous Silicon Manufacturing Equipment
EP	10772799.2		High-Productivity Porous Silicon Manufacturing Equipment
JP	2012-509957	5872456	High-Productivity Porous Silicon Manufacturing Equipment
MY	PI2011005354		High-Productivity Porous Silicon Manufacturing Equipment
US	12/774,667	8,999,058	High-Productivity Porous Silicon Manufacturing Equipment
US	14/679,731		High-Productivity Porous Silicon Manufacturing Equipment
US	61/175,535		High-Productivity Porous Silicon Manufacturing Equipment
WO	PCT/US2010/033792		High-Productivity Porous Silicon Manufacturing Equipment
US	12/774,713	8,420,435	Ion Implantation Fabrication Process For Thin-Film Crystalline Silicon Solar Cells
US	13/688,062		Ion Implantation Fabrication Process For Thin-Film Crystalline Silicon Solar Cells
US	61/175,698		Application Of Ion Implantation Process In Thin-Film Crystalline Silicon Solar Cell Fabrication
US	61/182,635		Self-Supporting Three Dimensional Thin Film Semiconductor Substrate With Through-Holes For Making See-Through Solar Cells
DE	10781392.5	EP2436028	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing (Validated in DE FR GB & NL)
EP	10781392.5	EP2436028	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing (Validated in DE FR GB & NL)
FR	10781392.5	EP2436028	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing (Validated in DE FR GB & NL)
GB	10781392.5	EP2436028	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing (Validated in DE FR GB & NL)

MY	PI2011700177	MY159405-A1	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing
NL	10781392.5	EP2436028	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing (Validated in DE FR GB & NL)
US	12/791,842	8,551,866	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing
US	13/962,291	8,916,772	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing
US	14/578,161	9,680,041	Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing
US	15/620,719		THREE DIMENSIONAL THIN FILM SEMICONDUCTOR SUBSTRATE WITH THROUGH-HOLES AND METHOD OF MANUFACTURING
US	61/228,068		Three-Dimensional Solar Cell Structures And Methods Of Manufacturing
WO	PCT/US2010/036975		Three-Dimensional Thin-Film Semiconductor Substrate With Through-Holes And Methods Of Manufacturing
US	61/259,829		High-Productivity Substrate Edge Preparation Manufacturing Equipment
EP	10756809.9		Method For Fabricating A Three-Dimensional Thin-Film Semiconductor Substrate From A Template
MY	PI2011004548	MY-159267-A	Method For Fabricating A Three-Dimensional Thin-Film Semiconductor Substrate From A Template
US	12/618,663		Thin-Film Solar Cells Based On Crystalline Templates Having Inverted Pyramidal Cavity.
US	12/731,058	8,288,195	Method For Fabricating A Three-Dimensional Thin-Film Semiconductor Substrate From A Template
US	13/652,237		Method For Fabricating A Three-Dimensional Thin-Film Semiconductor Substrate From A Template
WO	PCT/US2010/028534		Method For Fabricating A Three-Dimensional Thin-Film Semiconductor Substrate From A Template
US	12/618,668	8,294,026	High-Efficiency Thin-Film Solar Cells
US	13/657,745		High-Efficiency Thin-Film Solar Cells
CN	201080063494.8	ZL201080063494.8	High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Thin Planar Semiconductor Absorbers
CN	201080063303.8	ZL201080063303.8	High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Semiconductor Wafers
CN	201080063496.7	ZL201080063496.7	High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Three-Dimensional Semiconductor Absorbers
EP	10836710.3	2510551	High-efficiency photovoltaic back-contact solar cell structures and manufacturing methods using thin planar semiconductors
EP	10836723.6		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Semiconductor Wafers

EP	10836703.8		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Three-Dimensional Semiconductor Absorbers
MY	PI2012700546		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Thin Planar Semiconductor Absorbers
MY	PI2012700547		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Semiconductor Wafers
NO	14/629,273	9,196,759	High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods
NO	14/949,602		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods
US	13/057,104	8,962,380	High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Thin Planar Semiconductor Absorbers
US	13/057,115		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Semiconductor Wafers
US	13/057,123		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Three-Dimensional Semiconductor Absorbers
US	61/285,140		High-Efficiency Photovoltaic Solar Cell Structures and Manufacturing Methods
WO	PCT/US2010/059759		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Thin Planar Semiconductor Absorbers
WO	PCT/US2010/059783		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Semiconductor Wafers
WO	PCT/US2010/059748		High-Efficiency Photovoltaic Back-Contact Solar Cell Structures And Manufacturing Methods Using Three-Dimensional Semiconductor Absorbers
CN	201080063771.5		Mobile Vacuum Carriers For Thin Wafer Processing
EP	10842566.1		Mobile Vacuum Carriers For Thin Wafer Processing
US	13/515,848		Mobile Vacuum Carriers For Thin Wafer Processing
US	61/286,638		Mobile Vacuum Carriers For Thin Wafer Processing
WO	PCT/US2010/060591		Mobile Vacuum Carriers For Thin Wafer Processing
CN	201080064953.4	ZL201080064953.4	Mobile Electrostatic Carriers For Thin Wafer Processing
DE	10841770.0	EP2519967	Mobile Electrostatic Carriers For Thin Wafer Processing (validated in DE DK FR GB & NL);
DK	10841770.0	EP2519967	Mobile Electrostatic Carriers For Thin Wafer Processing (validated in DE DK FR GB & NL);
EP	10841770.0	EP2519967	Mobile Electrostatic Carriers For Thin Wafer Processing (validated in DE DK FR GB & NL);
FR	10841770.0	EP2519967	Mobile Electrostatic Carriers For Thin Wafer Processing (validated in DE DK FR GB & NL);
GB	10841770.0	EP2519967	Mobile Electrostatic Carriers For Thin Wafer Processing (validated in DE DK FR GB & NL);

NL	10841770.0	EP2519967	Mobile Electrostatic Carriers For Thin Wafer Processing (validated in DE DK FR GB & NL);
US	13/520,139	9,330,952	Bipolar Mobile Electrostatic Carriers For Wafer Processing
US	14/991,772		Bipolar Mobile Electrostatic Carriers For Wafer Processing
US	61/291,156		Mobile Electrostatic Carriers For Thin Wafer Processing
WO	PCT/US2010/062614		Mobile Electrostatic Carriers For Thin Wafer Processing
US	61/300,219		Reinforcement Of Thin Semiconductor Substrates For Solar Cell, Microelectronics, And Related Applications
US	61/303,770		High-Efficiency Photovoltaic Solar Cell Structures And Manufacturing Methods
CN	201180018589.2	ZL201180018589.2	Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
EP	11742933.2		Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
US	13/026,239	8,241,940	Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
US	13/554,103	9,401,276	Apparatus For Forming Porous Silicon Layers On At Least Two Surfaces Of A Plurality Of Silicon Templates
US	15/219,213		Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
US	61/304,340		Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
WO	PCT/US2011/024670		Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
US	61/304,349		Double-Sided Reusable Template For Fabrication Of Semiconductor Substrates For Photovoltaic Cell And Microelectronics Device Manufacturing
EP	11772838.6		Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells
KR	10-2012-7030770	10-1381305	Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells
KR	10-2013-7012059		Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells
US	13/092,942		Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells
US	61/327,506		Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells

WO	PCT/US2011/033706		Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells
US	61/327,563		Methods For Releasing A Thin-Film Substrate From A Reusable Template
EP	11787543.5		Laser Processing For High-Efficiency Thin Crystalline Silicon Solar Cell Fabrication
EP	11853473.4		Laser Processing Methods For Photovoltaic Solar Cells
KR	10-2012-7033876	10-1289787	Laser Processing For High-Efficiency Thin Crystalline Silicon Solar Cell Fabrication
KR	10-2013-7020198	10-1384853	Laser Processing Methods For Photovoltaic Solar Cells
MY	PI2013701141		Laser Processing For High-Efficiency Thin Crystalline Silicon Solar Cell Fabrication
US	13/118,295	8,399,331	Laser Processing For High-Efficiency Thin Crystalline Silicon Solar Cell Fabrication
US	13/271,212	9,508,886	Method For Making A Crystalline Silicon Solar Cell Substrate Utilizing Flat Top Laser Beam
US	15/361,832		Method For Making A Crystalline Silicon Solar Cell Substrate Utilizing Flat Top Laser Beam
US	13/303,488		Method For Forming A Photovoltaic Solar Cell Comprising Laser Annealing The Front Surface Of Silicon Substrate Having A Passivation Layer Covered Thereon.
US	13/340,877	8,637,340	Patterning Of Silicon Oxide Layers Using Pulsed Laser Ablation
US	13/340,887		Laser Doping Techniques For High-Efficiency Crystalline Semiconductor Solar Cells
US	13/340,903	9,455,362	Laser Irradiation Aluminum Doping For Monocrystalline Silicon Substrates
US	15/276,740		Laser Irradiation Aluminum Doping For Monocrystalline Silicon Substrates
US	13/846,230	9,419,165	Laser Processing For Back Contact Crystalline Silicon Solar Cell Fabrication
US	15/237,526		Laser Processing For Back Contact Crystalline Silicon Solar Cell Fabrication
US	14/137,172	9,236,510	Patterning Of Silicon Oxide Layers Using Pulsed Laser Ablation
US	14/991,789		Patterning Of Silicon Oxide Layers Using Pulsed Laser Ablation
US	61/349,120		Laser Processing For High-Efficiency Solar Cell Fabrication
WO	PCT/US2011/038444		Laser Processing For High-Efficiency Thin Crystalline Silicon Solar Cell Fabrication
WO	PCT/US2011/062019		Laser Annealing Applications In High-Efficiency Solar Cells
WO	PCT/US2011/068037		Laser Processing Methods For Photovoltaic Solar Cells
EP	11793204.6		High Productivity Thin Film Deposition Method And System
KR	10-2013-7000556	10-1369282	High Productivity Thin Film Deposition Method And System

KR	10-2013-7009928		High Productivity Thin Film Deposition Method And System
US	13/157,250		High Productivity Thin Film Deposition Method And System
US	61/353,042		Parallel-Architecture High-Productivity Depletion-Mode Epitaxial Semiconductor Deposition Reactor Apparatus and Method
WO	PCT/US2011/039877		High Productivity Thin Film Deposition Method And System
EP	11871380.9		Backplane Reinforcement And Interconnects For Solar Cells
EP	12765891.2		Active Backplane For Thin Silicon Solar Cells
KR	10-2013-7005704		Backplane Reinforcement And Interconnects For Solar Cells
KR	10-2013-7028432		Active Backplane For Thin Silicon Solar Cells
MY	PI2013700332	MY-158500-A	Backplane Reinforcement And Interconnects For Solar Cells
MY	PI2014700151		Active Backplane For Thin Silicon Solar Cells
US	13/204,626	8,946,547	Backplane Reinforcement And Interconnects For Solar Cells
US	14/611,982		Backplane Reinforcement And Interconnects For Solar Cells
US	13/433,280		Active Backplane For Thin Silicon Solar Cells
US	14/615,335		Active Backplane For Thin Silicon Solar Cells
US	61/370,956		Backplane Reinforcement And Interconnects For Solar Cells
WO	PCT/US2011/046873		Backplane Reinforcement And Interconnects For Solar Cells
WO	PCT/US2012/031043		Active Backplane For Thin Silicon Solar Cells
KR	10-2013-7005997	10-1289789	Apparatus And Method For Repeatedly Fabricating Thin Film Semiconductor Substrates Using A Template
US	13/209,390		Apparatus And Method For Repeatedly Fabricating Thin Film Semiconductor Substrates Using A Template
US	61/373,793		Apparatus And Method For Repeatedly Fabricating Thin Film Semiconductor Substrates Using A Template
WO	PCT/US2011/047699		Apparatus And Method For Repeatedly Fabricating Thin Film Semiconductor Substrates Using A Template
EP	11827704.5		High-Throughput Batch Porous Silicon Manufacturing Equipment Design and Processing Methods
EP	11876396.0		Apparatus And Method For Uniformly Forming Porous Semiconductor On A Substrate
KR	10-2013-7010390	10-1347681	High-Throughput Batch Porous Silicon Manufacturing Equipment Design and Processing Methods
KR	10-2013-7014255		Apparatus And Method For Uniformly Forming Porous Semiconductor On A Substrate
US	13/244,466	9,076,642	High-Throughput Batch Porous Silicon Manufacturing Equipment Design And Processing Methods
US	14/792,412		High-Throughput Batch Porous Silicon Manufacturing Equipment Design And Processing Methods
US	15/398,681		High-Throughput Batch Porous Silicon Manufacturing Equipment Design And Processing Methods

US	13/288,721	8,906,218	Apparatus And Method For Uniformly Forming Porous Semiconductor On A Substrate
US	13/470,237		High-Throughput Batch Porous Silicon Manufacturing Equipment Design And Processing Methods
US	14/563,888		Apparatus And Method For Uniformly Forming Porous Semiconductor On A Substrate
US	61/386,318		High-Throughput Batch Porous Silicon Manufacturing Equipment Design and Processing Methods
WO	PCT/US2011/053183		High-Throughput Batch Porous Silicon Manufacturing Equipment Design and Processing Methods
WO	PCT/US2011/059177		Apparatus And Method For Uniformly Forming Porous Semiconductor On A Substrate
US	61/389,154		Methods And Apparatus For High-Productivity Batch Wafer Processing
US	61/391,863		Flat-Top Laser Beams For High-Throughput Processing Of Back Contact Solar Cells
US	61/409,940		Apparatus And Method For Uniformly Forming Porous Semiconductor On A Substrate
US	61/417,181		Laser Annealing Applications In High-Efficiency Solar Cells
US	61/428,600		Patterning Of Silicon Oxide Layers Using Pulsed Laser Ablation
US	61/428,953		Laser Doping Techniques For High-Efficiency Crystalline Semiconductor Solar Cells
US	61/428,957		Laser Annealing For Aluminum Doping And Formation Of Back-Surface Field In Solar Cell Contacts
EP	11856289.1		Deposition Systems And Processes
KR	10-2013-7020188	10-1368598	Deposition Systems And Processes
MY	PI2013701140		Deposition Systems And Processes
US	13/341,965		Deposition Systems And Processes
US	61/429,032		Apparatus And Method For Reducing The Cost And Improving Uniformity Of Deposition Systems And Processes
WO	PCT/US2011/068267		Deposition Systems And Processes
KR	10-2013-7020199	10-1384872	Method For Reconstructing A Semiconductor Template
MY	PI2013701139		Method For Reconstructing A Semiconductor Template
US	13/341,976		Method For Reconstructing A Semiconductor Template
US	61/429,033		Methods For Reconstructing, Thickening, Repairing, Smoothing, And Reconditioning Of A Semiconductor Substrate
WO	PCT/US2011/068270		Method For Reconstructing A Semiconductor Template
US	61/468,548		Active Backplane For Thin Silicon Solar Cells
AU	2012258898		Self-Activated Front Surface Bias For A Solar Cell
AU	2015200219		Self-Activated Front Surface Bias For A Solar Cell
EP	12790369.8		Self-Activated Front Surface Bias For A Solar Cell
KR	10-2013-7033627	10-1449891	Self-Activated Front Surface Bias For A Solar Cell
US	13/476,955		Self-Activated Front Surface Bias For A Solar Cell
US	61/488,668		Front Surface Bias Plus Bypass Protection For A Solar Cell With Back Surface Contacts



US	61/488,628		Front Surface Bias Plus Bypass Protection For A Solar Cell With Back Surface Contacts
WO	PCT/US2012/038895		Self-Activated Front Surface Bias For A Solar Cell
KR	10-2013-7034083	10-1532721	Spatially Selective Laser Annealing Applications In High-Efficiency Solar Cells
US	13/477,008		Spatially Selective Laser Annealing Applications In High-Efficiency Solar Cells
US	61/488,684		Spatially Selective Laser Annealing Technique For High-Efficiency Crystalline Semiconductor Solar Cells
WO	PCT/US2012/038907		Spatially Selective Laser Annealing Applications In High-Efficiency Solar Cells
KR	10-2013-7034593	10-1389030	Method And Apparatus For Reconditioning A Carrier Wafer For Reuse
MY	PI2013702563		Method And Apparatus For Reconditioning A Carrier Wafer For Reuse
US			
US	13/482,963		Method And Apparatus For Reconditioning A Carrier Wafer For Reuse
US	61/490,562		Structures, Apparatuses, And Methods For Fabricating Thin Solar Cells Including The Reconditioning And Reuse Of Carrier Wafers
WO	PCT/US2012/039891		Method And Apparatus For Reconditioning A Carrier Wafer For Reuse
EP	12793962.7		Ion Implantation And Annealing For High Efficiency Back-Contact Back-Junction Solar Cells
KR	10-2013-7034723	10-1396027	Ion Implantation And Annealing For High Efficiency Back-Contact Back-Junction Solar Cells
US	13/483,024	9,318,644	Ion Implantation And Annealing For Thin-Film Crystalline Solar Cells
US	15/131,190		Ion Implantation And Annealing For Thin-Film Crystalline Solar Cells
US	61/490,859		High Efficiency Back-Contact, Back-Junction, Solar Cells Fabricated By Ion Implantation And Laser Annealing
WO	PCT/US2012/039901		Ion Implantation And Annealing For High Efficiency Back-Contact Back-Junction Solar Cells
US	61/521,743		Backside Reinforcement of Thin Crystalline Si Solar Cells
AU	2012294932	2012294932	High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
CN	201280049551.6	ZL201280049551.6	High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
EP	12822670.1		High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
JP	2014-525003		High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers

JP	2017-120887		HIGH-EFFICIENCY SOLAR PHOTOVOLTAIC CELLS AND MODULES USING THIN CRYSTALLINE SEMICONDUCTOR ABSORBERS
KR	10-2014-7006376		High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
MY	PI2014700259		High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
US	13/807,631		High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
US	61/521,754		High-Efficiency Solar Cells Using Thin Crystalline Semiconductor Absorbers
WO	PCT/US2012/000348		High-Efficiency Solar Photovoltaic Cells And Modules Using Thin Crystalline Semiconductor Absorbers
AU	2012340098	2012340098	Smart Photovoltaic Cells And Modules
CN	201280067268.6		Smart Photovoltaic Cells And Modules
CN	201480033927.3		Smart Photovoltaic Cells And Modules
EP	12850632.6		Smart Photovoltaic Cells And Modules
JP	2014-542579		Smart Photovoltaic Cells And Modules
JP	2016-507903		Smart Photovoltaic Cells And Modules
KR	10-2014-7016608		Smart Photovoltaic Cells And Modules
MY	PI2014701287		Smart Photovoltaic Cells And Modules
MY	PI2015703627		Smart Photovoltaic Cells And Modules
US	13/682,674	9,293,619	Smart Photovoltaic Cells And Modules
US	14/991,841		Smart Photovoltaic Cells And Modules
US	15/076,577		Smart Photovoltaic Cells And Modules
US	14/252,776		Smart Photovoltaic Cells And Modules
US	14/426,921		Smart Photovoltaic Cells And Modules
US	61/561,928		Smart Photovoltaic Cells And Modules For Increased Power Harvesting, Enhanced Energy Yield, Remote Access Performance Monitoring And Control
WO	PCT/US2012/066150		Smart Photovoltaic Cells And Modules
WO	PCT/US2014/034057		Smart Photovoltaic Cells And Modules
AU	2012358174		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
AU	2015210451		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
JP	2014-548999		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
JP	2017-70753		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
KR	10-2014-7020690		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
MY	PI2014702373		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
US	13/726,169	9,337,374	High Productivity Spray Processing For The Metallization Of Semiconductor Workpieces
US	15/150,235		High Productivity Spray Processing For The Metallization Of Semiconductor Workpieces

US	61/579,819		High-Productivity Atmospheric-Pressure Thermal Spray Processing Equipment For Solar Cell Metallization and Interconnects Applications
WO	PCT/US2012/071561		High Productivity Spray Processing For Semiconductor Metallization And Interconnects
AU	2012362505	2012362505	Systems And Methods For Enhanced Light Trapping In Solar Cells
JP	2014-550436		Systems And Methods For Enhanced Light Trapping In Solar Cells
KR	10-2014-7020992	10-1654548	Systems And Methods For Enhanced Light Trapping In Solar Cells
US	13/727,393	9,583,651	Systems And Methods For Enhanced Light Trapping In Solar Cells
US	61/580,290		Laser Texture Of Frontside And Backside Of Crystalline Silicon Solar Cells For Enhanced Trapping Of Solar Radiation
WO	PCT/US2012/071677		Systems And Methods For Enhanced Light Trapping In Solar Cells
AU	2014208227		Multi-Level Solar Cell Metallization
AU	2016265969		Multi-Level Solar Cell Metallization
JP	2014-550535		Multi-Level Solar Cell Metallization
MY	PI2014702439		Multi-Level Solar Cell Metallization
US	13/731,112		Multi-Level Solar Cell Metallization
US			
US	61/582,184		Structure And Method For Multi-Level Metallization Of Solar Cells
WO	PCT/US2012/072249		Multi-Level Solar Cell Metallization
AU	2013222069		Systems And Methods For Laser Splitting And Device Layer Transfer
EP	13752284.3		Systems And Methods For Laser Splitting And Device Layer Transfer
JP	2014-558952		Systems And Methods For Laser Splitting And Device Layer Transfer
KR	10-2014-7027309		Systems And Methods For Laser Splitting And Device Layer Transfer
US	13/778,047	9,214,353	Systems And Methods For Laser Splitting And Device Layer Transfer
US	14/968,685		Systems And Methods For Laser Splitting And Device Layer Transfer
US	61/603,370		Laser Splitting Apparatus And Method For Device Layer Transfer
WO	PCT/US2013/027826		Systems And Methods For Laser Splitting And Device Layer Transfer
US	61/603,894		High Throughput Wafering Tool Using Laser Splitting And Separation Process
AU	2013225860	2013225680	Structures And Methods For High Efficiency Compound Semiconductor Solar Cells
JP	2014-560068		Structures And Methods For High Efficiency Compound Semiconductor Solar Cells

KR	10-2014-7027472		Structures And Methods For High Efficiency Compound Semiconductor Solar Cells
US	13/781,708		Structures And Methods For High Efficiency Compound Semiconductor Solar Cells
US	61/605,186		Structures And Methods For High-Efficiency Compound Semiconductor Solar Cells Based On A Reusable Silicon Template And Porous Silicon Lift-Off Platform
WO	PCT/US2013/028468		Structures And Methods For High Efficiency Compound Semiconductor Solar Cells
WO	PCT/US2013/028465		Structures And Methods For High Efficiency Compound Semiconductor Solar Cells
US	61/609,347		High Throughput Laser Splitting Tools And Processing Methods For Device Layer Transfer
AU	2013237911		Back Contact Solar Cells Using Aluminum-Based Alloy Metallization
JP	2015-503623		Back Contact Solar Cells Using Aluminum-Based Alloy Metallization
KR	10-2014-7030233		Back Contact Solar Cells Using Aluminum-Based Alloy Metallization
US	13/853,031		Back Contact Solar Cells Using Aluminum-Based Alloy Metallization
US	61/617,023		Manufacturing Methods Of Backcontact Thin Silicon Solar Cells With Printable Aluminum-Silicon Alloy Paste For Selective Emitter
WO	PCT/US2013/034503		Back Contact Solar Cells Using Aluminum-Based Alloy Metallization
AU	2013237992		End Point Detection For Back Contact Solar Cell Laser Via Drilling
JP	2015-503615		End Point Detection For Back Contact Solar Cell Laser Via Drilling
US	13/852,966		End Point Detection For Back Contact Solar Cell Laser Via Drilling
US	61/617,033		Real-Time Via Drilling End-Point Detection and Process Control During Laser Via Drilling of Backplane Used in High-Efficiency Crystalline Semiconductor Solar Cells
WO	PCT/US2013/034483		End Point Detection For Back Contact Solar Cell Laser Via Drilling
AU	2013289151		High Efficiency Solar Cell Structures And Manufacturing Methods
JP	2015-504686		High Efficiency Solar Cell Structures And Manufacturing Methods
US	13/855,657		High Efficiency Solar Cell Structures And Manufacturing Methods
US	15/478,140		High Efficiency Solar Cell Structures And Manufacturing Methods
US	61/619,300		High Efficiency Solar Cell Structures And Manufacturing Methods
WO	PCT/US2013/035029		High Efficiency Solar Cell Structures And Manufacturing Methods

US	13/866,990		Temperature Calibration And Control For Semiconductor Reactors
US	61/635,824		Temperature Calibration Method And Apparatus For Epitaxial Semiconductor Reactors
US	PCT/US2013/037481		Temperature Calibration And Control For Semiconductor Reactors
JP	2015-509090		Resistance Component Extraction For Back Contact Back Junction Solar Cells
US	13/868,987	8,828,784	Resistance Component Extraction For Back Contact Back Junction Solar Cells
US	14/479,540	9,461,582	Electrical Parametric Testing For Back Contact Semiconductor Solar Cells
US	15/284,475		Electrical Parametric Testing For Back Contact Semiconductor Solar Cells
US	61/637,126		Structures And Methods Of Resistance Component Extraction From Back Contacted/Back Junction Solar Cells
WO	PCT/US2013/037863		Resistance Component Extraction For Back Contact Back Junction Solar Cells
AU	2013272248		Manufacturing Methods And Structures For Large-Area Thin-Film Solar Cells And Other Semiconductor Devices
US	13/869,928		Manufacturing Methods And Structures For Large-Area Thin-Film Solar Cells And Other Semiconductor Devices
US	61/637,831		Manufacturing Methods And Structures For Large-Area Thin-Film Solar Cells And Other Semiconductor Devices
WO	PCT/US2013/038085		Manufacturing Methods And Structures For Large-Area Thin-Film Solar Cells And Other Semiconductor Devices
WO	PCT/US2013/038081		Manufacturing Methods And Structures For Large-Area Thin-Film Solar Cells And Other Semiconductor Devices
US	61/638,474		High-Productivity Atmospheric-Pressure Thermal And Plasma Spray Processing Equipment For Solar Cell Metallization And Interconnect Applications
AU	2013267481		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
AU	2016200610		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
CN	201380040222.X		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
EP	13798110.6		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
JP	2015-515163		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells

KR	10-2014-7036595	10-1528447	Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
MY	PI2014703566		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
US	13/905,113		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
US	61/652,833		Structures And Methods Of Formation Of Non-Contiguous Distributed Base And Emitter Contacts For High Efficiency Solar Cells
WO	PCT/US2013/043193		Structures And Methods Of Formation Of Contiguous And Non-Contiguous Base Regions For High Efficiency Back-Contact Solar Cells
US	61/696,725		Texture Structures And Methods For Producing Diffuse Rear Mirrors On The Backsides Of Crystalline Silicon Solar Cells For Enhanced Trapping Of Solar Radiation
US	61/708,477		Method and Apparatus for Compound Semiconductor Solar Cells by Device Layer Transfer with Laser Splitting
AU	2013331304	2013331304	Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
CN	2013800592188	ZL2013800592188	Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
EP	13847902.7		Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
JP	2015-537802	6063577	Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
KR	10-2015-7012565	10-1563851	Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
MY	PI2015000994		Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
US	14/055,813	9,219,171	Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
US	14/975,496		Systems And Methods For Monolithically Integrated Bypass Switches And Photovoltaic Solar Cells
US	61/714,723		Monolithically-Integrated Bypass Switch (MIBS) For Distributed Shade Management And Enhanced Energy Yield In Photovoltaic Modules
WO	PCT/US2013/065316		Systems And Methods For Monolithically Integrated Bypass Switches In Photovoltaic Solar Cells And Modules
AU	2013337262		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules

CN	2013800692877		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
EP	13850237.2		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
IN	1444/MUMNP/2015		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
JP	2015-540876		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
KR	10-2015-7014822		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
MY	PI2015001179		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
US	14/072,759		Monolithic Isled (Tiled) Solar Cell (Icell) For Low-Cost High-Performance Photovoltaics Modules
US	14/659,235		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells
US	14/666,303		Monolithic Isled (Tiled) Solar Cell (Icell) For Low-Cost High-Performance Photovoltaics Modules
US	15/417,804		Monolithic Isled (Tiled) Solar Cell (Icell) For Low-Cost High-Performance Photovoltaics Modules
US	61/722,620		Monolithic Isled (Tiled) Solar Cell (Icell) For Low-Cost High-Performance Photovoltaics Modules
WO	PCT/US2013/068599		Systems And Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
US	61/725,434		Control And Optimization Of Via Drilling Of Backplane Used In High-Efficiency Crystalline Semiconductor Solar Cells Using Real-Time End-Point Detection During Laser Via Drilling Or In-Line Inspection Of Drilled Holes
US	61/725,981		Manufacturing Methods Of Backcontact Thin Silicon Solar Cells With Printable Aluminum-Silicon Alloy Paste For Selective Emitter
CN	2014800204647		Monolithically Isled Back Contact Back Junction Solar Cells Using Bulk Wafers
KR	10-2015-7025078		Monolithically Isled Back Contact Back Junction Solar Cells Using Bulk Wafers
MY	PI2015002028		Monolithically Isled Back Contact Back Junction Solar Cells Using Bulk Wafers
US	14/179,526	9,515,217	Monolithic Isled (Tiled) Solar Cell (Icell) For Low-Cost High-Performance Photovoltaics Modules
US	61/763,580		Back Contact Back Junction Solar Cells Using Bulk Wafers
WO	PCT/US2014/016140		Monolithically Isled Back Contact Back Junction Solar Cells Using Bulk Wafers
US	61/764,210		PV Mounting System
US	61/764,217		PV Mounting System Utilizing Special MSR UV Protect Layer
US	61/764,228		Quick Mount PV Composition Mount

US	61/764,243		Photovoltaic Array Flashing
US	61/764,255		Photovoltaic Attachment Panel
US	61/764,264		PV Installation System
US	61/806,262		Method For Producing An Ultra Smooth Silicon Surface For Solar Cell Applications
CN	201480031613.X		Solar Photovoltaic Module Power Control And Status Monitoring System Utilizing Laminate-Embedded Remote Access Module Switch
JP	2016-507902		Solar Photovoltaic Module Power Control And Status Monitoring System Utilizing Laminate-Embedded Remote Access Module Switch
MY	PI2015703632		Solar Photovoltaic Module Power Control And Status Monitoring System Utilizing Laminate-Embedded Remote Access Module Switch
US	14/252,750		Solar Photovoltaic Module Power Control And Status Monitoring System Utilizing Laminate-Embedded Remote Access Module Switch
US	14/428,598		Solar Photovoltaic Module Power Control And Status Monitoring System Utilizing Laminate-Embedded Remote Access Module Switch
US	61/811,736		Embedded Power Electronics For Smart Photovoltaic Modules
WO	PCT/US2014/034054		Solar Photovoltaic Module Power Control And Status Monitoring System Utilizing Laminate-Embedded Remote Access Module Switch
MY	PI2015703772		Solar Cell Metallization
US	14/260,272		Solar Cell Metallization
US	61/815,106		Bus-Bars And Metal 2 Exclusions For 2-Level Metallized Solar Cells
WO	PCT/US2014/035209		Solar Cell Metallization
MY	PI2015703888		Damage Free Laser Patterning Of Transparent Layers For Forming Doped Regions On A Solar Cell Substrate
MY	PI2015002647		Annealing For Damage Free Laser Processing For High Efficiency Solar Cells
US	14/265,351		Damage Free Laser Patterning Of Transparent Layers For Forming Doped Regions On A Solar Cell Substrate
US	14/265,331	9,214,585	Annealing For Damage Free Laser Processing For High Efficiency Solar Cells
US	14/968,855		Annealing For Damage Free Laser Processing For High Efficiency Solar Cells
US	14/968,672		Annealing For Damage Free Laser Processing For High Efficiency Solar Cells
US	14/787,858		Damage Free Laser Patterning Of Transparent Layers For Forming Doped Regions On A Solar Cell Substrate
US	61/816,830		Damage Free Laser Patterning of Transparent Layers for High-Efficiency Crystalline Semiconductor Solar Cells
WO	PCT/US2014/035965		Damage Free Laser Patterning Of Transparent Layers For Forming Doped Regions On A Solar Cell Substrate



WO	PCT/US2014/035961		Annealing For Damage Free Laser Processing For High Efficiency Solar Cells
MY	PI2015704055		Solar Photovoltaic Blinds And Curtains For Residential And Commercial Buildings
US	14/275,869		Solar Photovoltaic Blinds And Curtains For Residential And Commercial Buildings
US	61/822,426		BIPV Solar Curtains And Blinds Using Flexible Thin Crystalline Semiconductor Solar Cells
WO	PCT/US2014/037746		Solar Photovoltaic Blinds And Curtains For Residential And Commercial Buildings
US	61/827,252		Pulsed Laser Processing For High Efficiency Crystalline Semiconductor Solar Cells
MY	PI2015704775		High-Throughput Thermal Processing Methods For Producing High-Efficiency Crystalline Silicon Solar Cells
US	14/321,802		High-Throughput Thermal Processing Methods For Producing High-Efficiency Crystalline Silicon Solar Cells
US	61/841,501		Enhanced-Throughput Thermal Processing Methods For Producing High-Efficiency Crystalline Silicon Solar Cells
WO	PCT/US2014/045169		High-Throughput Thermal Processing Methods For Producing High-Efficiency Crystalline Silicon Solar Cells
US	14/325,356		Passivation Methods For Achieving Ultra-Low Surface Recombination Velocities For High-Efficiency Solar Cells
US	15/490,494		SURFACE PASSIVATION OF HIGH-EFFICIENCY CRYSTALLINE SILICON SOLAR CELLS
US	61/843,429		Material Structures and Process Methods for High-Performance Surface Passivation of High-Efficiency Crystalline Silicon Solar Cells
WO	PCT/US2014/045630		Surface Passivation Of High-Efficiency Crystalline Silicon Solar Cells
US	14/326,461		Thin Film Solar Cell Lamination Stack For High Volume Manufacturing
US	61/843,849		Thin Crystalline Silicon Solar Cell Lamination Stack For High Volume Manufacturing
WO	PCT/US2014/045836		Thin Film Solar Cell Lamination Stack For High Volume Manufacturing
US	61/843,856		Backplane Attached Thin-Silicon Cells Using Multicrystalline Silicon Wafers
US	61/859,166		Pulsed Laser Processing For High Efficiency Crystalline Semiconductor Solar Cells
US	61/859,602		Structures and Manufacturing Methods for High-Efficiency, Thin Semiconductor Absorber, Back-Contact, Back-Junction Photovoltaic Solar Cells and Modules Using Bulk Wafers
CN	2014800433769		Laminated Backplane For Solar Cells
KR	10-2016-7005028		Laminated Backplane For Solar Cells
US	14/903,273		Laminated Backplane For Solar Cells

US	61/860,216		Flexible Backplane Materials And Related Lamination Processes For Backplane-Attached High-Efficiency Solar Cells And Modules
US	14/447,597		Laminated Backplane For Solar Cells
WO	PCT/US2014/048989		Laminated Backplane For Solar Cells
WO	PCT/US2014/048983		Laminated Backplane For Solar Cells
US	07868383.6		Structures And Manufacturing Methods For High Efficiency Solar Cells
CN	201480059502X		Monolithic Solar Cell Arrays And Fabrication Methods
KR	10-2016-7008511		Monolithic Solar Cell Arrays And Fabrication Methods
MY	PI2016700686		Monolithic Solar Cell Arrays And Fabrication Methods
US	14/475,566		Monolithic Solar Cell Arrays And Fabrication Methods
US	61/872,035		Contiguous-Backplane-Attached Photovoltaic Module Structures and Manufacturing Methods Using Monolithic Cell-Level and Module-Level Metallization
WO	PCT/US2014/053759		Monolithic Solar Cell Arrays And Fabrication Methods
CN	2014800618816		Laser Processing For Solar Cell Base And Emitter Regions
KR	10-2016-7010013		Laser Processing For Solar Cell Base And Emitter Regions
US	14/488,263		Laser Processing For Solar Cell Base And Emitter Regions
US	15/491,882		Laser Processing For Solar Cell Base And Emitter Regions
US	61/878,573		Damage Free Laser Patterning Of Aluminum Oxide For Solar Cell Applications
WO	PCT/US2014/055964		Laser Processing For Solar Cell Base And Emitter Regions
US	14/493,341	9,379,258	Fabrication Methods For Back Contact Back Junction Solar Cells
US	15/193,107		Fabrication Methods For Back Contact Back Junction Solar Cells
US	14/493,335		Fabrication Methods For Back Contact Solar Cells
US	61/880,777		High-Efficiency, Thin-Crystalline-Silicon-Absorber Back-Contact Solar Cells And Manufacturing Methods
US	14/495,883		Photovoltaic Monolithic Solar Module Connection And Fabrication Methods
US	61/881,594		Monolithic Module Using Contiguous Backplane and Monolithic Cell and Module Metallization for Reduction of Installed Photovoltaic System Balance-Of-System (BOS) Wiring Cost
US	62/140,397		Multi-Connector Junction Box
US	62/140,408		Multi-Connector Junction Box
US	61/891,364		Surface Morphology Detection
US	61/895,326		Smart Photovoltaic Modules With Distributed Embedded Maximum Power Point Tracking (MPPT) For Enhanced Power Harvesting
US	61/898,504		Damage Free Laser Patterning Of Aluminum Oxide For Solar Cell Applications
CN	2014800726558		Dielectric-Passivated Metal Insulator Photovoltaic Solar Cells

US	14/538,760		Dielectric-Passivated Metal Insulator Photovoltaic Solar Cells
US	61/902,526		Multiple Dielectric Passivation Based Metal Insulator Semiconductor Solar Cells
WO	PCT/US2014/065091		Dielectric-Passivated Metal Insulator Photovoltaic Solar Cells
CN	2014800728426		Metal Foil Metallization For Backplane-Attached Solar Cells And Modules
MY	PI2016701707		Metal Foil Metallization For Backplane-Attached Solar Cells And Modules
US	14/539,978		Metal Foil Metallization For Backplane-Attached Solar Cells And Modules
US	61/903,267		Multi-Level Metallization Structures And Methods for High-Efficiency Solar Cells
WO	PCT/US2014/065312		Metal Foil Metallization For Backplane-Attached Solar Cells And Modules
US	PI2016001006		Aluminum Oxide Passivation For Solar Cells
US	14/557,096		Aluminum Oxide Passivation For Solar Cells
US	15/491,906		Aluminum Oxide Passivation For Solar Cells
US	14/632,696		Aluminum Oxide Passivation And Damage Removal For Solar Cells
US	61/910,271		Al <sub>2</sub> O <sub>3</sub> Passivation For Back Contact Back Junction Solar Cells
WO	PCT/US2014/067946		Aluminum Oxide Passivation For Solar Cells
WO	PCT/US2015/017773		Aluminum Oxide Passivation And Damage Removal For Solar Cells
CN	2014800743869		Passivated Contacts For Back Contact Back Junction Solar Cells
KR	10-2016-7017831		Passivated Contacts For Back Contact Back Junction Solar Cells
US	14/558,707		Passivated Contacts For Back Contact Back Junction Solar Cells
US	15/465,458		Passivated Contacts For Back Contact Back Junction Solar Cells
US	61/910,936		Insulator and Wide Bandgap Semiconductor Based Passivated Contacts
WO	PCT/US2014/068242		Passivated Contacts For Back Contact Back Junction Solar Cells
US	14/576,161		Single Passivated Contacts For Back Contact Back Junction Solar Cells
US	61/917,919		Insulator and Wide Bandgap Semiconductor Based Passivated Contacts
WO	PCT/US2014/071322		Single Passivated Contacts For Back Contact Back Junction Solar Cells
US	14/582,090		Amorphous Silicon Passivated Contacts For Back Contact Back Junction Solar Cells
US	61/920,209		Amorphous Silicon Passivated (ASP) Contacts for Back Contact Back Junction Solar Cells
WO	PCT/US2014/072294		Amorphous Silicon Passivated Contacts For Back Contact Back Junction Solar Cells

US	14/582,142		Self Aligned Contacts for Monolithically Isled Back Contact Back Junction Solar Cells
US	14/582,168		Self Aligned Contacts For Back Contact Back Junction Solar Cells
US	14/582,177		Self Aligned Contacts for Solar Cells
US	15/464,186		Self Aligned Contacts for Solar Cells
US	61/920,271		Structures And Methods Of Forming Self Aligned Contacts For High Efficiency Back Contacted Solar Cells
US	62/327,430		High-Efficiency Back-Contact Photovoltaic Solar Cell Structures And Manufacturing Process Flows
WO	PCT/US2014/072299		Self Aligned Contacts For Back Contact Back Junction Solar Cells
WO	PCT/US2014/072301		Self Aligned Contacts For Back Contact Back Junction Solar Cells
CN	2015800137223		Discontinuous Emitter And Base Islands For Back Contact Solar Cells
KR	10-2016-7022086		Discontinuous Emitter And Base Islands For Back Contact Solar Cells
US	14/596,213		Discontinuous Emitter And Base Islands For Back Contact Solar Cells
US	61/926,852		Structures And Methods For Back-Contact Solar Cells Using Discontinuous Emitter And Base Islands
WO	PCT/US2015/011279		Discontinuous Emitter And Base Islands For Back Contact Solar Cells
US	14/601,202	9,130,076	Trench Isolation For Monolithically Isled Solar Photovoltaic Cells And Modules
US	14/846,537		Trench Isolation For Monolithically Isled Solar Photovoltaic Cells And Modules
US	61/929,097		Trench Isolation Structures And Manufacturing Process Methods For Monolithically Isled Solar Photovoltaic Cells And Modules
WO	PCT/US2015/012104		Trench Isolation For Monolithically Isled Solar Photovoltaic Cells And Modules
US	61/941,995		High-Efficiency Backplane-Attached Solar Cells Using High-Conductivity Metal-Foil Metallization
US	61/943,332		Smart Photovoltaic Modules Using Embedded Distributed MPPT Power Optimizers
CN	201580022322.9		Self Aligned Contacts For Back Contact Solar Cells
EP	15755082.3		Self Aligned Contacts For Back Contact Solar Cells
JP	2016-554365		Self Aligned Contacts For Back Contact Solar Cells
KR	10-2016-7026447		Self Aligned Contacts For Back Contact Solar Cells
US	61/945,116		Structures And Methods Of Forming Self Aligned Contacts For High Efficiency Back Contacted Solar Cells
WO	PCT/US2015/017852		Self Aligned Contacts For Back Contact Solar Cells
US	61/945,126		Al2O3 Passivation For Back Contact Back Junction Solar Cells

US	62/010,980		Monolithic Module Cell To Cell Interconnection For Improved Fault Tolerance
US	14/817,185		Solar Cell Surface Passivation Using Photo-Anneal
US	62/032,414		Front Passivation Stabilization Using Photo-Chemical Anneal for Solar Cells
WO	PCT/US2015/043507		Solar Cell Surface Passivation Using Photo-Anneal
US	14/818,294		Impact Resistant Solar Cells
US	62/033,091		Impact Resistant Solar Cells
WO	PCT/US2015/043689		Impact-Resistant Photovoltaic Modules
US	14/825,163		Amorphous Silicon Based Laser Doped Solar Cells
US	62/036,609		Amorphous Silicon Based Laser Doped High Performance Solar Cell Structures And Methods
WO	PCT/US2015/044935		Amorphous Silicon Based Laser Doped Solar Cells
US	14/826,171		Rear Wide Band Gap Passivated (RGP) PERC Cell Architecture
US	62/037,094		Rear Wide Band Gap Passivated (RGP) PERC Cell Architecture
WO	PCT/US2015/045160		Rear Wide Band Gap Passivated Parc Solar Cells
US	14/829,635		Photovoltaic Solar Module Metallization And Distributed Shade Management Connection And Fabrication Methods
US	62/038,787		Macro Isled Cell And Monolithic Module Metallization
WO	PCT/US2015/045775		Photovoltaic Solar Module Metallization And Distributed Shade Management Connection And Fabrication Methods
US	14/841,690		Laser Doping For Making Back Contact Back Junction Solar Cells
US	62/044,312		Laser Doping Based Efficient Manufacturing Methods For Making High Efficiency Back Contacted Back Junction Solar Cells
WO	PCT/US2015/047837		Laser Doping For Making Back Contact Back Junction Solar Cells
US	14/843,991		Dual Level Solar Cell Metallization Having First Level Metal Busbars
US	62/044,997		Multiple Metal 1 Busbar Solutions For Solar Cells
WO	PCT/US2015/048211		Dual Level Solar Cell Metallization Having First Level Metal Busbars
WO	PCT/US2015/048210		Dual Level Solar Cell Metallization Having First Level Metal Busbars
US	14/936,673		Temporary Field Assisted Passivation For Testing Of Partially Processed Photovoltaic Solar Cells
US	15/524,929		Temporary Field Assisted Passivation For Testing Of Partially Processed Photovoltaic Solar Cells
US	62/077,150		In-Line Test And Sort For Photovoltaic Monolithic Modules
WO	PCT/US2015/059796		Temporary Field Assisted Passivation For Testing Of Partially Processed Photovoltaic Solar Cells
US	14/937,861		Impact Resistant Lightweight Photovoltaic Modules
US	15/525,513		Impact Resistant Lightweight Photovoltaic Modules
US	62/077,878		Impact Resistant Lightweight Module Design

WO	PCT/US2015/060046		Impact Resistant Lightweight Photovoltaic Modules
US	15/547,719		Shade Management Of Solar Cells And Solar Cell Regions
US	62/110,387		Macro-iCell and Monolithic Smart Module Metallization
US	62/111,652		Macro-iCell And Monolithic Smart Module Metallization Designs
US	62/117,418		Macro-iCell And Monolithic Smart Module Metallization Designs
US	62/164,992		Macro-iCell And Monolithic Smart Module Metallization Designs
WO	PCT/US2016/016025		Shade Management Of Solar Cells And Solar Cell Regions
US	62/159,947		High-Performance Solar Photovoltaic Modules Using Distributed Shade Management SBRs And MPPT Power Optimizers
US	62/168,803		Photovoltaic Modules Using Embedded Blocking Diodes And Magnetic Reed Switches
US	15/172,146		Electroluminescence Testable Photovoltaic Modules Having Shade Management Solutions
US	15/172,149		Electroluminescence Testable Photovoltaic Modules Having Shade Management Solutions
US	62/170,100		High-Performance Solar Photovoltaic Systems Using Parallel-Connected Array Of High-Voltage Solar Modules
US	15/202,557		Discrete Carrier Selective Passivated Contacts For Solar Cells
US	62/188,456		Discrete Carrier-Selective Passivated Contacts Using Silicon Nanoparticles For High-Efficiency Crystalline Silicon Solar Cells
US	62/317,377		Discrete Carrier-Selective Passivated Contacts Using Silicon Nanoparticles For High-Efficiency Crystalline Silicon Solar Cells
US	62/327,426		High-Efficiency Back-Contact Photovoltaic Solar Cell Structures And Manufacturing Process Flows
US	62/327,424		High-Efficiency Back-Contact Photovoltaic Solar Cell Structures And Manufacturing Process Flows
US	62/489,988		HIGH-EFFICIENCY BACK-CONTACT PHOTOVOLTAIC SOLAR CELL STRUCTURES AND MANUFACTURING PROCESS FLOWS
WO	PCT/US2016/041018		Discrete Carrier Selective Passivated Contacts For Solar Cells
US	62/190,235		Landscape Macro-iCell And Monolithic Smart Module Metallization Designs
US	62/202,749		Photovoltaic Module Mounting And Installation System (title, inventors, ref# & assignee need to be checked on Private PAIR)
US	62/352,015		Solar Panel Mounting System
US	15/231,768		Photovoltaic Module Mounting And Installation System

US	62/257,695		Photovoltaic Module Mounting And Installation System (title, inventors, ref# & assignee need to be checked on Private PAIR)
US	62/301,978		Solar Module Mount
US	62/521,919		Solar Panel Mounting System
WO	PCT/US2016/046085		Photovoltaic Module Mounting And Installation System
US	62/372,298		Flash Lamp Annealing And Light Soaking Of Frontside Passivation Layer
US	62/202,759		Flash Lamp Annealing And Light Soaking Of Frontside Passivation Layer
US	62/503,260		FLASH LAMP ANNEALING AND LIGHT SOAKING OF FRONTSIDE PASSIVATION LAYER
US	62/202,776		Low Voltage Module
US	15/250,881		Solar Cell Current And Voltage Characteristic Measurement
US	15/250,895		Solar Cell Current And Voltage Characteristic Measurement
US	62/211,622		Method For Measuring Current/Voltage Characteristics Of A Solar Cell Under A Constant Temperature
WO	PCT/US2016/049333		Solar Cell Current And Voltage Characteristic Measurement
US	62/220,861		Second Level M2 Metallization Stack
US	62/221,553		Color-Adjusted Photovoltaic Modules Using Backplane- Laminated Monolithic Module Sheets: Backplane- Selective Powder Coating
US	62/257,698		Power Optimization For Solar Cells
WO	PCT/US2016/063209		Multi-Modal Maximum Power Point Tracking Optimization Solar Photovoltaic System
US	62/257,702		Smart Building-Integrated Photovoltaic (BIPV) Rooftop Tiles
US	62/265,953		Rear Contact and Infrared Mirrors for Back-Contact Solar Cells
WO	PCT/US2016/066243		Rear Contact And Infrared Mirror Structures And Manufacturing Methods For Back Contact Solar Cells
US	15/405,273		Solar Photovoltaic Module Remote Access Module Switch And Real-Time Temperature Monitoring
US	62/277,845		Real-Time Measurement of Photovoltaic Module Temperature Using Remote-Access Module Switch (RAMS)
WO	PCT/US2017/013265		Solar Photovoltaic Module Remote Access Module Switch And Real-Time Temperature Monitoring
US	62/292,218		Smart Building Integrated Photovoltaic (BIPV) Rooftop Tiles and Shingles
US	62/302,796		Reduced Contact Area Contacts for Photovoltaic Solar Cells
US	62/401,857		Photovoltaic Module Mounting and Installation Systems
US	62/401,868		Reverse Current Protection, Electroluminescence (EL) Testability, and Flash Current-Voltage Testability of Photovoltaic Modules Comprising MPPT Optimizers

US	62/405,866		Reverse Current Protection, Electroluminescence (EL) Testability, And Flash Current-Voltage Testability Of Photovoltaic Modules Comprising MPPT Optimizers
US	62/505,328		Reverse Current Protection, Electroluminescence (EL) Testability, and Flash Current-Voltage Testability of Photovoltaic Modules Comprising MPPT Optimizers
US	62/408,592		High-Performance IBC Solar Cell And Module Technology
US	62/512,405		HIGH-PERFORMANCE IBC SOLAR CELL AND LIGHTWEIGHT MODULE TECHNOLOGY; REDUCED COST, ENHANCED PV MODULE & SYSTEM PERFORMANCE, AND ENHANCED HARMONIZATION WITH EXISTING MAINSTREAM SOLAR CELL FAB LINE
US	62/438,467		Ballasted Fast Installation Solar Photovoltaic Systems
US	62/441,198		East West Orientation Solar Photovoltaic Systems
US	62/442,860		High-Performance Low-Cost Solar Photovoltaic Systems for Commercial and Industrial Rooftop Applications
US	62/508,225		HIGH-PERFORMANCE LOW-COST SOLAR PHOTOVOLTAIC SYSTEMS FOR COMMERCIAL AND INDUSTRIAL ROOFTOP APPLICATIONS
CN	201630629953.4		Mount Foot for Solar Panels
EP	003526813-000		Mount Foot for Solar Panels
US	29/568,494		Mount Foot for Solar Panels
US	29/568,506		Solar Panel Array
CN	201630629186.7		Solar Panel Array
US	29/568,507		Solar Panel Array
US	29/568,508		Solar Panel Array
US	29/568,511		Solar Panel Array
US	29/568,509		Mount System for Photovoltaics
US	29/568,510		Mount System for Photovoltaics
US	201630629207.5		Mount Foot for Solar Panels
US	29/568,702		Mount Foot for Solar Panels
US	29/568,836		Mount Foot for Solar Panels
US	29/568,495		Mount Foot for Solar Panels
CN	201630629530.2		Mount Body for a Solar Panel
US	29/568,497		Mount Body for a Solar Panel
US	29/568,500		Mount Body for a Solar Panel
US	29/568,499		Mount Body for a Solar Panel
CN	201630629964.2		Mount System for Photovoltaics
US	29/568,502		Mount System for Photovoltaics
US	29/568,503		Mount System for Photovoltaics
CN	201630629952.X		Mount System for Photovoltaics
US	29/568,504		Mount System for Photovoltaics
CN	201630629956.8		Solar Panel Array
US	29/568,505		Solar Panel Array
US	13/310,083	8,992,746	Anodizing Apparatus
JP	2010-269416		Anodizing Apparatus
JP	2010-269417		Anodizing Apparatus



US	14/673,611		Anodizing Apparatus
US	13/688,645		Anodizing Apparatus, An Anodizing System Having The Same, And A Semiconductor Wafer
CN	201210505374.X	ZL201210505374.X	Anodizing Apparatus, An Anodizing System Having The Same, And A Semiconductor Wafer
JP	2011-262421	5908266	Anodizing Apparatus, An Anodizing System Having The Same, And A Semiconductor Wafer