

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
	Name	Execution Date
	UNIST ACADEMY-INDUSTRY RESEARCH CORPORATION	02/12/2016
RECEIVING PARTY DATA		
Name:	ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY	
Street Address:	50, UNIST-GIL	
City:	ULSAN	
State/Country:	KOREA, REPUBLIC OF	
Postal Code:	44919	
PROPERTY NUMBERS Total: 1		
	Property Type	Number
	Application Number:	14394835
CORRESPONDENCE DATA		
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NAME OF SUBMITTER:	YOON S. HAM	
SIGNATURE:	/Yoon S. Ham/	
DATE SIGNED:	02/18/2016	
Total Attachments: 5		
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source=Assignment#page5.tif		

ASSIGNMENT

WHEREAS, UNIST Academy-Industry Research Corporation, a corporation of Republic of Korea, located and doing business at 100, BANYEON-RI, EONYANG-EUP, ULSU-GUN, ULSAN, Republic of Korea (hereinafter Assignor) own U.S. Patent Nos. 9,166,578, issued 10/20/2015, 9,203,083, issued 12/01/2015, 9,172,081, issued 10/27/2015, 8,574,942, issued 11/05/2013, 9,096,705, issued 8/4/2015, 8,808,921, issued 8/19/2014, 9,156,682, issued 10/13/2015, 8,669,008, issued 3/11/2014, 8,871,480, issued 10/28/2014, 9,017,638, issued 4/28/2015, 6,339,334, issued 1/15/2002, 8,575,335, issued 11/5/2013, 8,618,858, issued 12/31/2013, 9,196,896, issued 11/24/2015, 9,150,020, issued 10/6/2015, 8,625,654, issued 1/7/2014, 9,029,252, issued 5/12/2015, and 9,083,919, issued 7/14/2015, and U.S. Patent Application Nos. 14/845,488, filed 9/4/2015, 14/144,792, filed 12/31/2013, 14/700,215, filed 4/30/2015, 14/555,712, filed 11/28/2014, 14/555,713, filed 11/28/2014, 14/399,333, filed 11/6/2014, 14/411,176, filed 12/24/2014, 14/476,880, filed 9/4/2014, 14/494,764, filed 9/24/2014, 14/309,945, filed 6/20/2014, 14/159,521, filed 1/21/2014, 14/515,526, filed 10/16/2014, 14/227,028, filed 3/27/2014, 14/250,790, filed 4/11/2014, 14/057,306, filed 10/18/2013, 14/037,590, filed 9/26/2013, 14/037,615, filed 9/26/2013, 13/855,798, filed 4/3/2013, 13/378,729, filed 12/16/2011, 13/358,214, filed 1/25/2012, 13/358,119, filed 1/25/2012, 13/006,921, filed 1/14/2011, 12/655,034, filed 12/22/2009, 14/626,214, filed 2/19/2015, 14/758,097, filed 6/26/2015, 14/759,656, filed 7/8/2015, 14/605,716, filed 1/26/2015, 14/394,835, filed 10/16/2014, 14/495,961, filed 9/25/2014, 14/335,324, filed 7/18/2014, 14/322,007, filed 7/2/2014, 14/353,032, filed 4/21/2014, 14/369,199, filed 6/27/2014, 14/233,129, filed 3/5/2014, 13/843,964, filed 3/15/2013, 13/810,023, filed 3/20/2013, 13/270,198, filed 10/10/2011, 13/904,525, filed 5/29/2013, 14/765,567, filed 8/3/2015, 14/264,804, filed 4/29/2014, 14/610,040, filed 1/30/2015, 14/027,053, filed 9/13/2013, 13/566,553, filed 8/3/2012, 14/781,261, filed 9/29/2015, 14/248,822, filed 4/9/2014, 14/248,126, filed 4/8/2014, 14/605,738, filed 1/26/2015, 14/535,952, filed 11/7/2014, and 14/744,449, filed 6/19/2015, by virtue of an Assignment as shown in the appendix A attached herewith.

WHEREAS, ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, a corporation of Republic of Korea, located and doing business at 50, UNIST-gil, Ulsan 44919, Republic of Korea (hereinafter Assignee) is desirous of acquiring the complete title and interest in said Letters Patents and Patent Applications.

NOW, THEREFORE, in consideration of the sum of one dollar (\$1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, Assignor by these presents do sell, assign and transfers unto said Assignee, its successors, legal representatives, heirs and assigns the entire

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right, title and interest in the United States to said invention as described in U.S. Patent Nos. 9,166,578, issued 10/20/2015, 9,203,083, issued 12/01/2015, 9,172,081, issued 10/27/2015, 8,574,942, issued 11/05/2013, 9,096,705, issued 8/4/2015, 8,808,921, issued 8/19/2014, 9,156,682, issued 10/13/2015, 8,669,008, issued 3/11/2014, 8,871,480, issued 10/28/2014, 9,017,638, issued 4/28/2015, 6,339,334, issued 1/15/2002, 8,575,335, issued 11/5/2013, 8,618,858, issued 12/31/2013, 9,196,896, issued 11/24/2015, 9,150,020, issued 10/6/2015, 8,625,654, issued 1/7/2014, 9,029,252, issued 5/12/2015, and 9,083,919, issued 7/14/2015, and U.S. Patent Application Nos. 14/845,488, filed 9/4/2015, 14/144,792, filed 12/31/2013, 14/700,215, filed 4/30/2015, 14/555,712, filed 11/28/2014, 14/555,713, filed 11/28/2014, 14/399,333, filed 11/6/2014, 14/411,176, filed 12/24/2014, 14/476,880, filed 9/4/2014, 14/494,764, filed 9/24/2014, 14/309,945, filed 6/20/2014, 14/159,521, filed 1/21/2014, 14/515,526, filed 10/16/2014, 14/227,028, filed 3/27/2014, 14/250,790, filed 4/11/2014, 14/057,306, filed 10/18/2013, 14/037,590, filed 9/26/2013, 14/037,615, filed 9/26/2013, 13/855,798, filed 4/3/2013, 13/378,729, filed 12/16/2011, 13/358,214, filed 1/25/2012, 13/358,119, filed 1/25/2012, 13/006,921, filed 1/14/2011, 12/655,034, filed 12/22/2009, 14/626,214, filed 2/19/2015, 14/758,097, filed 6/26/2015, 14/759,656, filed 7/8/2015, 14/605,716, filed 1/26/2015, 14/394,835, filed 10/16/2014, 14/495,961, filed 9/25/2014, 14/335,324, filed 7/18/2014, 14/322,007, filed 7/2/2014, 14/353,032, filed 4/21/2014, 14/369,199, filed 6/27/2014, 14/233,129, filed 3/5/2014, 13/843,964, filed 3/15/2013, 13/810,023, filed 3/20/2013, 13/270,198, filed 10/10/2011, 13/904,525, filed 5/29/2013, 14/765,567, filed 8/3/2015, 14/264,804, filed 4/29/2014, 14/610,040, filed 1/30/2015, 14/027,053, filed 9/13/2013, 13/566,553, filed 8/3/2012, 14/781,261, filed 9/29/2015, 14/248,126, filed 4/8/2014, 14/605,738, filed 1/26/2015, 14/535,952, filed 11/7/2014, 14/248,822, filed 4/9/2014, and 14/744,449, filed 6/19/2015, and all re-issues, or extensions of said Letters Patents to be held and enjoyed by said Assignee for its own use, or for its legal representatives, successors, heirs, and assigns to the full end of the term for which said Letters Patents and Patent Applications are granted, and any extensions thereof, as fully and entirely as the same would have been held by said Assignor had this assignment and sale not been made, and for the same consideration said Assignor hereby covenants and agrees that at the time of execution and delivery of this instrument it is the lawful owner of the complete right, title and interest in and to said invention and said Letters Patents and Patent Applications above mentioned, and its interest is unencumbered and that it has good and full right and lawful authority to sell and convey its interest in the manner set forth herein; and for the same consideration Assignor hereby covenants and agrees that it will, whenever counsel for said Assignee, or counsel for their legal successors, legal representatives, heirs or assigns shall advise that any proceedings in connection with said Letters Patents and Patent Applications or any re-issue or extension of said Letters Patents and Patent Applications to be obtained thereon, is lawful and desirable, sign all

papers and documents, make all lawful oaths, and do all acts necessary as required to be done for the procurement, maintenance, enforcement and defense of said Letters Patents, without charge to said Assignor, its successors, legal representatives, heirs and assigns, but at the expense of said Assignee, their successors, legal representatives, heirs and assigns.

Assignor hereby further assigns to Assignee all claims and causes of action for infringement of the patent rights assigned herein, including the right to sue for, and collect damages for, any and all acts of past and future infringement.

Assignor hereby grants Hauptman Ham, LLP, located at 2318 Mill Road, Suite 1400, Alexandria, VA 22314 (Customer No. 22429), the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

Assignor:

UNIST Academy-Industry Research Corporation

Date: 12 February 2016

Signature: _____

Name: _____

SUNG CHUL BAE

Title: President of UNIST AIRC

Enclosed: Appendix A

Appendix A

	U.S. Patent No.	Application No.	Issue Date	Filing Date	Reel No.	Frame No.	Recorded
1		14/845,488		9/4/2015	036782	0203	10/13/2015
2		14/144,792		12/31/2013	033617	0060	8/27/2014
3		14/700,215		4/30/2015	035553	0573	4/30/2015
4		14/555,712		11/28/2014	034275	0958	11/28/2014
5		14/555,713		11/28/2014	034275	0965	11/28/2014
6		14/399,333		11/6/2014	034119	0141	11/6/2014
7		14/411,176		12/24/2014	034583	0012	12/24/2014
8		14/476,880		9/4/2014	033685	0622	9/4/2014
9		14/494,764		9/24/2014	033812	0379	9/24/2014
10	9,166,578	14/300,348	10/20/2015	6/10/2014	033063	0987	6/10/2014
11		14/309,945		6/20/2014	033321	0734	7/16/2014
12		14/159,521		1/21/2014	032095	0509	1/21/2014
13		14/515,526		10/16/2014	034009	0474	10/16/2014
14		14/227,028		3/27/2014	032539	0480	3/27/2014
15		14/250,790		4/11/2014	032656	0605	4/11/2014
16		14/057,306		10/18/2013	031439	0601	10/18/2013
17		14/037,590		9/26/2013	031287	0176	9/26/2013
18		14/037,615		9/26/2013	031286	0659	9/26/2013
19	9,203,083	13/940,358	12/01/2015	7/12/2013	030784	0769	7/12/2013
20	9,172,081	13/798,567	10/27/2015	3/13/2013	029981	0102	3/13/2013
21		13/855,798		4/3/2013	030139	0651	4/3/2013
22	8,574,942	13/650,754	11/05/2013	10/12/2012	029121	0765	10/12/2012
23	9,096,705	13/624,311	8/4/2015	9/21/2012	029027	0852	9/21/2012
24	8,808,921	13/576,703	8/19/2014	8/2/2012	028707	0148	8/2/2012
25	9,156,682	13/480,506	10/13/2015	5/25/2012	027536	0681	01/16/2012
26		13/378,729		12/16/2011	027473	0307	12/20/2011
27	8,669,008	13/239,912	3/11/2014	9/22/2011	026997	0297	9/26/2011
28		13/358,214		1/25/2012	027593	0971	1/25/2012
29		13/358,119		1/25/2012	027593	0490	1/25/2012
30		13/006,921		1/14/2011	025650	0597	1/18/2011
31		12/655,034		12/22/2009	023727	0439	12/22/2009
32		14/626,214		2/19/2015	034985	0627	2/19/2015
33		14/758,097		6/26/2015	036126	0208	7/16/2015
34		14/759,656		7/8/2015	036016	0382	7/8/2015
35		14/605,716		1/26/2015	034819	0546	1/27/2015

36		14/394,835		10/16/2014	033961	0893	10/16/2014
37		14/495,961		9/25/2014	033814	0664	9/25/2014
38		14/335,324		7/18/2014	033758	0021	9/17/2014
39		14/322,007		7/2/2014	033728	0283	9/12/2014
40		14/353,032		4/21/2014	032715	0354	4/21/2014
41		14/369,199		6/27/2014	033192	0247	6/27/2014
42		14/233,129		3/5/2014	032359	0981	3/5/2014
43	8,871,480	13/981,661	10/28/2014	7/25/2013	030875	0004	7/25/2013
44		13/843,964		3/15/2013	030942	0044	8/5/2013
45		13/810,023		3/20/2013	029622	0493	1/14/2013
46	9,017,638	13/404,918	4/28/2015	2/24/2012	027760	0930	2/24/2012
47	6,339,334	09/507,460	1/15/2002	2/22/2000	025450	0431	12/6/2010
48		13/270,198		10/10/2011	027040	0855	10/11/2011
49	8,575,335	13/077,777	11/5/2013	3/31/2011	026058	0522	3/31/2011
50		13/904,525		5/29/2013	030874	0390	7/25/2013
51		14/765,567		8/3/2015	036250	0981	8/4/2015
52	8,618,858	13/309,769	12/31/2013	12/2/2011	027320	0283	12/2/2011
53		14/264,804		4/29/2014	032781	0338	4/29/2014
54		14/610,040		1/30/2015	034855	0115	1/30/2015
55		14/027,053		9/13/2013	036160	0670	7/22/2015
56		13/566,553		8/3/2012	031440	0840	10/3/2013
57	9,196,896	13/566,457	11/24/2015	8/3/2012	031660	0049	10/1/2013
58	9,150,020	14/294,126	10/6/2015	6/2/2014	033028	0107	6/4/2014
59	8,625,654	13/326,185	1/7/2014	12/14/2011	027397	0277	12/16/2011
60		14/781,261		9/29/2015	036685	0045	9/29/2015
61		14/744,449		6/19/2015	036182	0660	7/27/2015
62		14/248,822		4/9/2014	032636	0848	4/9/2014
63		14/248,126		4/8/2014	032630	0298	4/8/2014
64	9,029,252	14/178,566	5/12/2015	2/12/2014	035170	0589	3/16/2015
65		14/535,952		11/7/2014	034128	0428	11/7/2014
66		14/605,738		1/26/2015	034819	0685	1/27/2015
67	9,083,919	13/347,887	7/14/2015	1/11/2012	027514	0684	1/11/2012