# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT6080168

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

#### **CONVEYING PARTY DATA**

Name	Execution Date
DONG-HWAN KOO	04/11/2020
JOO-IL LEE	04/13/2020
MIN-KYU CHOI	04/10/2020

# **RECEIVING PARTY DATA**

Name:	SK HYNIX INC.
Street Address:	2091, GYEONGCHUNG-DAERO, BUBAL-EUB, ICHEON-SI
City:	GYEONGGI-DO
State/Country:	KOREA, REPUBLIC OF

# **PROPERTY NUMBERS Total: 1**

Property Type	Number
Application Number:	16859613

### CORRESPONDENCE DATA

Fax Number: (571)327-5452

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: 5713275450

Email: ipntlaw@ipntlaw.com Correspondent Name: IP & T GROUP LLP Address Line 1: 8230 LEESBURG PIKE

Address Line 2: SUITE 650

Address Line 4: VIENNA, VIRGINIA 22182

ATTORNEY DOCKET NUMBER:	P19H0209/US
NAME OF SUBMITTER:	JEONGSOOK YI
SIGNATURE:	/Jeongsook YI/
DATE SIGNED:	04/27/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).

### **Total Attachments: 3**

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**PATENT REEL: 052504 FRAME: 0969** 506033453

SHINSUNG: IVX000143692(P19H0209/US)

	Attorney Docket No.:
ASSIGNMENT OF AND DECLA FOR UNITED STATES	
WHEREAS KOO, Dong-Hwan	, hereinafter
referred to collectively as the assignor and inventor, has invente	d a certain improvement relating to
APPARATUS AND METHOD FOR IMPROVING WRITE TH	
[X] said application being attached hereto; [ ] said application having been filed in the United States Pater , as Application Serial No.	, and was amended
on(if applicabl  I the specification of which was filed under the Patent Cooper	(6);
Serial No, the United States of America b	eing designated.
consideration paid by said assignee to said assignor, the rece assigns, sells and transfers to said assignee, and said assignee's interest in and to said application, including any and all division any and all patents which may be granted therefor, including a assignee, and said assignee's successors and assigns, to have, he all divisions and continuations thereof, and the said invention including any and all renewals, reissues and prolongations there anywise arising from or appertaining thereto, for and doring a including any and all renewals, reissues and prolongations assignee's successors and assigns, in as ample and beneficial a enjoyed the same, if this assignment had not been made.	reation of One Dollar (\$1.00), and other good and valuable ipt of which is hereby acknowledged, said assignor hereby successors and assigns, the full and exclusive right, title and an and continuations thereof, and in and to said invention and my and all renewals, reissues and prolongations thereof; said lid, exercise and enjoy the said application, including any and and any and all patents which may be granted therefor evol, with all the rights, powers, privileges and advantages in the term or terms of any and all such patents when granted thereof, for the use and benefit of said assignee, and said a manner as the said assigner might or could have held and the request of said assignee, or said assignee's successors or
AND said assignor authorizes and requests the Comm said application, and on any and all divisions and continuations assigns, in accordance herewith.	issioner of Patents and Trademarks to issue Letters Patent on s thereof, to said assignee, and said assignee's successors and
As an above-named inventor, I hereby declare that the made by me, and that I am the original inventor or an original journal or the control of the control o	e above-identified application was made or authorized to be sint inventor of a claimed invention in the application.
I hereby acknowledge that any willful false statement by fine or imprisonment of not more than five (5) years, or both	made in this declaration is punishable under 18 U.S.C. 1001
ASSIGNOR (INVENTOR):	
Signature: 733	Date; 20/04/11

Page 1 of 1

Printed or Typed Name: KOO, Dong-Hwan

	Attorney Docket No.;
ASSIGNMENT OF AND DECLARATION	N FOR APPLICATION
FOR UNITED STATES LETTE	
WHEREAS CHOLMin-Kyu	, hereinafter
referred to collectively as the assignor and inventor, has invented a certain	
APPARATUS AND METHOD FOR IMPROVING WRITE THROUGH	IPUT OF MEMORY SYSTEM
X] said application being attached hereto;  ] said application having been filed in the United States Patent and Tra, as Application Serial No	ndernark Office on
on(if applicable);  ] the specification of which was filed under the Patent Cooperation Trea	
] the specification of which was filed under the Patent Cooperation Tree	aty on,
Serial No, the United States of America being desig	gnated,
AND WHEREAS SK hynix Inc. of 2091, Gyeongchung-daero, Korea, hereinafter referred to as the assignee or applicant, is desirous of a said application, including any and all divisions and continuations thereof satents which may be granted therefor, including any and all renewals, respectively.	acquiring the entire right, title and interest in and to f, and in and to said invention and any and all rissues and prolongations thereof;
NOW THIS WITNESSETH, that for and in consideration of consideration paid by said assignee to said assignor, the receipt of whissigns, sells and transfers to said assignee, and said assignee's successor interest in and to said application, including any and all divisions and formy and all patents which may be granted therefor, including any and all ssignee, and said assignee's successors and assigns, to have shold exercial divisions and continuations thereof, and the said invention and an including any and all renewals, reissues and prolongations thereof, with mywise arising from or appertaining thereto, for and during the term of	tich is hereby acknowledged, said assignor hereby rs and assigns, the full and exclusive right, title and atimuations thereof, and in and to said invention and if renewals, reissues and prolongations thereof, said ise and enjoy the said application, including any and ay and all patents which may be granted therefor all the rights, powers, privileges and advantages in
ssignee's successors and assigns, in as ample and beneficial a manner njoyed the same, if this assignment had not been made.	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assignor might or could have held an
ssignee's successors and assigns, in as ample and beneficial a manner njoyed the same, if this assignment had not been made.  AND said assignor hereby agrees to perform, upon the request ssigns, any and all acts relating to the obtaining or to the asserting of sa	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assignor might or could have held and at the said assignee, or said assignee's successors or
assignee's successors and assigns, in as ample and Beneficial a manner njoyed the same, if this assignment had not been made.  AND said assignor hereby agrees to perform, upon the request ssigns, any and all acts relating to the obtaining or to the asserting of said prolongations thereof.  AND said assignor authorizes and requests the Commissioner of aid application, and on any and all divisions and continuations thereof, the said application, and on any and all divisions and continuations thereof.	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assigner might or could have held and at of said assignee, or said assignee's successors or aid patents, including any and all renewals, reissue of Patents and Trademarks to issue Letters Patent or
assignee's successors and assigns, in as ample and Beneficial a manner moved the same, if this assignment had not been made.  AND said assignor hereby agrees to perform, upon the request ssigns, any and all acts relating to the obtaining or to the asserting of said prolongations thereof.  AND said assignor authorizes and requests the Commissioner of aid application, and on any and all divisions and continuations thereof, testigns, in accordance herewith.  As an above-named inventor, I hereby declare that the above-in	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assigner might or could have held and at of said assignee, or said assignee's successors of aid patents, including any and all renewals, ressues of Patents and Trademarks to issue Letters Patent or to said assignee, and said assignee's successors and deattified application was made or authorized to be
assignee's successors and assigns, in as ample and Beneficial a manner moved the same, if this assignment had not been made.  AND said assignor hereby agrees to perform, upon the request essigns, any and all acts relating to the obtaining or to the asserting of said prolongations thereof.  AND said assignor authorizes and requests the Commissioner of aid application, and on any and all divisions and continuations thereof, tessigns, in accordance herewith.  As an above-named inventor, I hereby declare that the above-ic nade by me, and that I am the original inventor or an original joint inventor I hereby acknowledge that any willful false statement made in the original false statement made in the original inventor or an original point inventor in the original false statement made in the original control of the same of the s	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assigner might or could have held and at of said assignee, or said assignee's successors or aid patents, including any and all renewals, reissue of Patents and Trademarks to issue Letters Patent or to said assignee, and said assignee's successors and dentified application was made or authorized to be for of a claimed invention in the application.
assignee's successors and assigns, in as ample and Beneficial a manner njoyed the same, if this assignment had not been made.  AND said assignor hereby agrees to perform, upon the request ssigns, any and all acts relating to the obtaining or to the asserting of saind prolongations thereof.  AND said assignor authorizes and requests the Commissioner of aid application, and on any and all divisions and continuations thereof, testigns, in accordance herewith.  As an above-named inventor, I hereby declare that the above-in ade by me, and that I am the original inventor or an original joint inventor. I hereby acknowledge that any willful false statement made in the original or imprisonment of not more than five (5) years, or both.	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assigner might or could have held and at of said assignee, or said assignee's successors or aid patents, including any and all renewals, reissue of Patents and Trademarks to issue Letters Patent or to said assignee, and said assignee's successors and dentified application was made or authorized to be for of a claimed invention in the application.
assigns, any and all acts relating to the obtaining or to the asserting of sa and prolongations thereof.  AND said assignor authorizes and requests the Commissioner of aid application, and on any and all divisions and continuations thereof, t assigns, in accordance herewith.  As an above-named inventor, I hereby declare that the above-ic made by me, and that I am the original inventor or an original joint inventor.	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assigner might or could have held and at of said assignee, or said assignee's successors or aid patents, including any and all renewals, reissue of Patents and Trademarks to issue Letters Patent or to said assignee, and said assignee's successors and dentified application was made or authorized to be for of a claimed invention in the application.
assignee's successors and assigns, in as ample and beneficial a manner enjoyed the same, if this assignment had not been made.  AND said assignor hereby agrees to perform, upon the request assigns, any and all acts relating to the obtaining or to the asserting of said prolongations thereof.  AND said assignor authorizes and requests the Commissioner of aid application, and on any and all divisions and continuations thereof, assigns, in accordance herewith.  As an above-named inventor, I hereby declare that the above-in the aid by me, and that I am the original inventor or an original joint inventor. I hereby acknowledge that any willful false statement made in the original or imprisonment of not more than five (5) years, or both.  ASSIGNOR (INVENTOR):	or terms of any and all such patents when granted or the use and benefit of said assignee, and said as the said assigner might or could have held and at of said assignee, or said assignee's successors or aid patents, including any and all renewals, reissue of Patents and Trademarks to issue Letters Patent or to said assignee, and said assignee's successors and dentified application was made or authorized to be for of a claimed invention in the application.

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Printed or Typed Name: CHOL Min-Kyu

SHINSUNG: I		

Attorney Docket No.:

ASSIGNMENT OF AND DECLARATION FOR APPLICATION FOR UNITED STATES LETTERS PATENT	
WHEREAS LEE, Joo-II	, hereinafter
referred to collectively as the assignor and inventor, has invented a certain improvement relating to	
APPARATUS AND METHOD FOR IMPROVING WRITE THROUGHPUT OF MEMORY SYSTEM	· · · · · · · · · · · · · · · · · · ·
[X] said application being attached hereto;  [ ] said application having been filed in the United States Patent and Trademark Office on	vas amended
Serial No, the United States of America being designated.	
AND WHEREAS SK hynix Inc. of 2091. Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-do, Korea, hereinafter referred to as the assignce or applicant, is desirous of acquiring the entire right, title and interest application, including any and all divisions and continuations thereof, and in and to said invention and any patents which may be granted therefor, including any and all renewals, reissues and prolongations thereof;	erest in and to
NOW THIS WITNESSETH, that for and in consideration of One Dollar (\$1.00), and other good consideration paid by said assignee to said assigner, the receipt of which is hereby acknowledged, said a assigns, sells and transfers to said assignee, and said assignee's successors and assigns, the full and exclusive interest in and to said application, including any and all divisions and continuations thereof, and in and to said any and all patents which may be granted therefor, including any and all renewals, reissues and prolongation assignee, and said assignee's successors and assigns, to have, hold, exercise and enjoy the said application, including any and all renewals, reissues and prolongations thereof, with all the rights, powers, privileges and anywise arising from or appertaining thereto, for and during the term or terms of any and all such patents including any and all renewals, reissues and prolongations thereof, for the use and benefit of said assignsee's successors and assigns, in as ample and beneficial a manner as the said assignor might or could enjoyed the same, if this assignment had not been made.	ssignor hereby right, title and i invention and ins thereof; said duding any and anted therefor, I advantages in when granted, gnee, and said
AND said assignor hereby agrees to perform, upon the request of said assignee, or said assignee's assigns, any and all acts relating to the obtaining or to the asserting of said patents, including any and all renand prolongations thereof.	s successors or iewals, reissues
AND said assignor authorizes and requests the Commissioner of Patents and Trademarks to issue Losaid application, and on any and all divisions and continuations thereof, to said assignee, and said assignee's	etters Patent on successors and
assigns, in accordance herewith.	
As an above-named inventor, I hereby declare that the above-identified application was made or a made by me, and that I am the original inventor or an original joint inventor of a claimed invention in the appl	uthorized to be leation.
I hereby acknowledge that any willful false statement made in this declaration is punishable under by fine or imprisonment of not more than five (5) years, or both.	18 U.S.C. 1001
그는 사람들은 마다가 하는 사람들이 가는 사람들이 가는 사람들이 되었다.	
ASSIGNOR (INVENTOR):	
ansion of the control	
Signature: Date: 2020.04.13	
Printed or Typed Name: LEE, Joo-II	

ORDED: 04/27/2020

PATENT REEL: 052504 FRAME: 0972

이주일/eFTL