

REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
**ENTRY OF INTERNATIONAL APPLICATION  
UNDER THE PATENT COOPERATION TREATY  
INTO SOUTH AFRICAN NATIONAL PHASE  
AND ACKNOWLEDGMENT OF RECEIPT**

(Section 42E(1) - Regulation 67B)

The processing under the Patents Act, 1978 of the undermentioned international application designating South Africa is hereby requested on the basis of this form.

Official Application No.		Applicant's or Agent's Reference
21	01	P81563ZA00
<b>2018/06105</b>		

International Application No.	International filing Date	Priority Date
PCT/CN2016/089725	2016/07/12	2016/06/07
71	Full Name(s) of Applicant(s)	
Dalian Institute of Chemical Physics, Chinese Academy of Sciences 457 Zhongshan Road, DALIAN 116023, LIAONING, CHINA (P.R.C.)		

54	Title of invention
<b>CATALYST AND METHOD FOR MANUFACTURING AROMATIC HYDROCARBON BY DIRECTLY CONVERTING SYNTHESIS GAS</b>	

The applicant has claimed priority (if any) as set out in the abovementioned international application
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<del>This application is for a patent of addition to patent application No.</del>		
21	01	

The abovementioned international application was filed in English or has been published under the Patent Cooperation Treaty in English	YES	NO	X
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This application is accompanied by:
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X	1.	Translation of the international application
	2.	Certified priority document(s)
	3.	Translation(s) of the priority document(s)
X	4.	A copy of the Form P2 (particulars for the register)
X	5.	A declaration and power of attorney on Form P3
X	6.	Statement on the use of indigenous biological resource, genetic resource traditional knowledge or use on Form P26
X	7.	Form P.8
X	8.	Form P4 - Other requests not specified

74	Address of Service:
Adams & Adams Lynnwood Bridge, 4 Daventry Street, Lynnwood Manor, PRETORIA SOUTH AFRICA	

Dated this 12th day of September 2018

**Digitally signed by : Janice Galvad**

.....  
Signature of Applicant(s)

This is returned to the applicant's  
address for service as proof of lodging.

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Official Date Stamp
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REPUBLIC OF SOUTH AFRICA

## REGISTER OF PATENTS

PATENTS ACT, 1978

Official application No.			Lodging date: Provisional			Acceptance date		
21	01	<b>2018/06105</b>	22			47		
International classification			Lodging date: National Phase			Granted date		
51	B01J;C07C		23	2018/09/12				
International Application No.			International filling Date			Priority Date		
PCT/CN2016/089725			2016/07/12			2016/06/07		
71	Full name(s) of applicant(s)/Patentee(s):							
Dalian Institute of Chemical Physics, Chinese Academy of Sciences								
71	Applicant substituted:					Date registered		
71	Assignee(s):					Date registered		
72	Full name(s) of inventor(s):							
PAN, Xiulian YANG, Junhao JIAO, Feng ZHU, Yifeng BAO, Xinhe								
Priority claimed:			Country		Number		Date	
			33 CN		31 201610397763.3		32 2016/06/07	
54	Title of invention							
<b>CATALYST AND METHOD FOR MANUFACTURING AROMATIC HYDROCARBON BY DIRECTLY CONVERTING SYNTHESIS GAS</b>								
Address of applicant(s)/patentee(s):								
457 Zhongshan Road, DALIAN 116023, LIAONING, CHINA (P.R.C.)								
74	Address for service							
Adams & Adams Lynnwood Bridge, 4 Daventry Street, Lynnwood Manor, PRETORIA SOUTH AFRICA Reference No. P81563ZA00								
61	Patent of addition No.				Date of any change			
Fresh application based on.					Date of any change			

REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
**APPLICATION OR REQUEST TO THE REGISTRAR**  
**(REGULATION 39)**

OFFICIAL APPLICATION NO.		
21	01	<b>2018/06105</b>

AGENT REFERENCE
P81563ZA00

IN THE NAME OF:	
71	Dalian Institute of Chemical Physics, Chinese Academy of Sciences

In terms of the following section(s) 50(1)(a) and/or 50(1)(b) of the Act and/or regulation(s) 11 & 39 of the Patent Regulations, the applicant hereby request the following:  That the application be amended to change the title to read: CATALYST AND METHOD FOR SYNTHESIS OF AROMATIC HYDROCARBONS THROUGH DIRECT CONVERSION OF SYNTHESIS GAS
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Documents, if any, lodged in support of the request:
N/A

ADDRESS FOR SERVICE	
74	Adams & Adams Lynnwood Bridge, 4 Daventry Street, Lynnwood Manor, PRETORIA SOUTH AFRICA

12 September 2018

Digitally signed by : Janice Galvad

\_\_\_\_\_  
Signature of Applicant

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The above application or request is hereby allowed/refused.

Reasons for refusal of conditions of allowance, if any:

OFFICIAL DATE STAMP
_____ REGISTRAR OF PATENTS

REPUBLIC OF SOUTH AFRICA  
PATENTS ACT, 1978  
**PUBLICATION PARTICULARS AND ABSTRACT**  
[Section 32(3)(a) – Regulation 2291)(g) AND 31]

OFFICIAL APPLICATION NO.		LODGING DATE	ACCEPTANCE DATE
21	01	22	47
<b>2018/06105</b>		2018/09/12	

INTERNATIONAL CLASSIFICATION	NOT FOR PUBLICATION
51	CLASSIFIED BY: WIPO
B01J;C07C	

FULL NAME(S) OF APPLICANT(S)	
71	Dalian Institute of Chemical Physics, Chinese Academy of Sciences 457 Zhongshan Road, DALIAN 116023, LIAONING, CHINA (P.R.C.)

FULL NAME(S) OF INVENTORS(S)	
72	1. PAN, Xiulian 2. YANG, Junhao 3. JIAO, Feng 4. ZHU, Yifeng 5. BAO, Xinhe

EARLIEST PRIORITY CLAIMED		DATE
COUNTRY	NUMBER	DATE
33	31	32
CN	201610397763.3	2016/06/07

TITLE OF INVENTION	
54	<b>CATALYST AND METHOD FOR MANUFACTURING AROMATIC HYDROCARBON BY DIRECTLY CONVERTING SYNTHESIS GAS</b>
57	

**ABSTRACT AS IMAGE**

The present invention relates to the field of manufacturing aromatic hydrocarbons using a synthesis gas, and specifically relates to a catalyst and a method for manufacturing aromatic hydrocarbon by directly converting the synthesis gas. The method uses the synthesis gas as the primary reactant and raw material, and implements conversion reaction on a fixed bed or a moving bed. The catalyst is a composite of a catalyst A and a catalyst B, wherein the catalyst A and the catalyst B are mechanically mixed to form the composite. The active component of catalyst A is an active metal oxide. The catalyst B is one or more of a ZSM-5 molecular sieve or a metal-decorated ZSM-5. The synthesis gas is subjected to a pressure of 0.1-6 MPa, a reaction temperature of 300-600°C, and a flow speed of 500-8,000 h<sup>-1</sup>. The reaction process has an extremely high product yield and selectivity, with the selectivity for an aromatic hydrocarbon reaching 50-85%, while the selectivity for a methane side product is less than 15%. The invention has excellent potential for future applications.

## Sales Journal

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**Document Reference** P3492048  
**File Reference** 2018\06105

**Form Code** Application for a patent accompanied by a complete  
specification in terms of section 30(1) {reg. 22(1)(a) and  
(e)}

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