# DR. JIN AN WANG

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## CURRICULUM VITAE

Dr. Jin An Wang is a full professor in Chemical Engineering of the Instituto Politécnico Nacional (IPN) in Mexico City. In 1998, he was awarded the title of Mexican National Researcher by the Mexico government (CONACyT). In 2007, he was selected as member of Mexican Academy of Sciences. Dr. Wang obtained his doctor degree in Chemical Engineering from East China University of Science and Technology in 1995. He worked as visiting professor in the Universidad Nacional Autónoma de México (1996-1998), Worcester Polytechnic Institute (2014-2015), and Universidad Autónoma Metropolitana-A (2018). Since 1998, Dr. Wang has occupied a professor position via the Programa de Excelencia del IPN. He is coauthor of more than 160 scientific publications and 5 patents and editor of 3 books. Since 2007, he has been chair of the First to Fifth International Symposium on New Catalytic Materials and co-chair of the China-Mexico Scientific Collaboration Conference. He

was invited as a guest editor of Catalysis Today, Advanced Materials Research, Materials Research Society Symposium Proceedings, and International Journal of Photoenergy, and served as reviewers of more than 40 international journals. Dr. Wang's research interest focuses on synthesis of new catalytic materials, catalysis for petroleum refining and treatment, catalysis for clean fuel production, and environmental catalysis.

## INTERESTS OF INVESTIGATION

1. Catalysis for clean fuel production (Hydrogen production from natural gas, glycerol and ethanol reforming, methanol partial oxidation…);
2. Catalysis for petroleum (C5-C7 isomerization, C4 dimerization, oxidative desulfurization of diesel…);
3. Photocatalysis ($Ag/CeO_2$/SBA-15, $Au/CeO_2$/Ti-SBA-15, $Fe/TiO_2$, $W\text{-}TiO_2/SiO_2$…)
4. New catalytic materials (Mesoporous materials, carbon nanotubes, Ag, Au, Ru and Rh nanoparticles…);
5. Catalysis for biofuel production.

## EDITORS OF BOOKS AND SPECIAL ISSUES

1. Advanced Catalytic Materials, Editors: L. E. Noreña, J. A. Wang.
   ISBN 978-953-51-2244-9. Publisher: INTECH Publications Ltd., 2016.
2. New Catalytic Material, Editors: J. A. Wang, J. M. Dominguez.
   ISBN: 978-1-60511-256-5. Publisher: Archival Publications Ltd., 2000.
3. Advances in New Catalytic Materials, Editors: J. A. Wang, G. Z. Cao, J. M. Dominguez.
   ISBN: 978-0-87849-240-4. Publisher: Tans Tech Publication Ltd., 2000.
4. International Journal of Photoenergy, special issue "Photocatalysis for Wastewater Treatment", 2019, Editors: J.A. Wang. L.E. Noreña, H.Q. Xie.
5. Catalysis Today, Vol. 212, 2013. Editors: J. M. Dominguez and J. A. Wang.
6. Catalysis Today, Vol. 166, 2011. Editors: J. M. Dominguez, J. A. Wang, and U. Sedran.
7. Catalysis Today, Vol. 148, 2009. Editors: J. M. Dominguez and J. A. Wang.

## SELECTED PUBLICATIONS (2014-2019)

Jing Liu, Ning Ding, Yuena Ge, Xiaolong Zhou, **Jin An Wang**, Chenglie Li, Dimerization of isobutene in C4 mixtures in the presence of ethanol over acid ion-exchange resins DH-2. *Catalysis Letters* 149(5), (**2019),** 1277–1285.

Jing Liu, Yuena Ge, Yueqin Song, Ming Du, Xiaolong Zhou, **Jin An Wang**, Dimerization of isobutene on sodium exchanged Amberlyst-15 resins. *Catalysis Communications*, 119 (**2019**) 57-61.

Yang Bai, Xian Shi, Pingquan Wang, Li Wnag, Kai Zhang, Ying Zhou, Haiquan Xie, **Jinan Wang,** Liqun Ye. $BiOBr_xI_{1-x}$/BiOBr heterostructure engineering for efficient molecular oxygen activation. *Chemical Engineering Journal* 356 (**2019**) 34-42.

U. Arellano, **J.A. Wang,** L.F. Chen, M. Asomoza, A. Guzman, S. Solís, A. Estrella, S. Cipagauta, L.E. Noreña, Transition metal oxides dispersed on Ti-MCM-41 hybrid core-shell catalysts for the photocatalytic degradation of Congo red. *Catalysis Today* **(2018) in press.**

J.M. Ramos, **J.A. Wang**, S.O. Flores, L.F. Chen, N. Nova, J. Navarrete, J.M. Domínguez, J.A. Szpunar. Ultrasound-assisted synthesis and catalytic activity of mesostructured FeOx/SBA-15 and FeOx/Zr-SBA-15 catalysts for the oxidative desulfurization of model diesel. *Catalysis Today* (**2018**) **in press.**

Xian Shi, Ping-Quan Wang, Li Wang, Yang Bai, Haiquan Xie, Ying Zhou, Jin An **Wang,** Zhongjun Li, Lingbo Qu, Liqun Ye. Few Layered BiOBr with Expanded Interlayer Spacing and Oxygen Vacancies for Efficient Decompose of Real Oil Field Produced Wastewater. *ACS Sustainable Chemistry & Engineering* 6 (**2018**) 13739-13746.

Ma. Ellena Manríquez, Luis Enrique Noreña, **Jin An Wang**, Lifang Chen, Jose Salmones, Julio González-Carcia, Carmen Reza, Francisco Tzompantzi, José G. Hernández-Cortez, Liqun Ye, Haiquan Xie. One-pot synthesis of Ru-doped ZnO Oxides for Photocatalytic degradation of 4-chorophenol. *International Journal of Photoenergy,* volume **2018,** pp.1-12, Articles ID 7065306.

M.A. Oliver-Tolentino, J. Vazquez-Samperio, S. Arellano-Ahumada, A. Guzman-Vargas, D. Ramirez-Rosales, J.A. **Wang,** E. Reguera, Enhancement of Stability by Positive Disruptive Effect on Mn-Fe Charge Transfer in Vacancy-Free Mn-Co Hexacyanoferrate through a Charge/Discharge Process in Aqueous Na-Ion Batteries. *Journal of Physical Chemistry C*, 122 (36), (**2018**) 20602-20610.

O.A. González Vargas, J.A. de los Reyes Heredia, V.A. Suárez-Toriello, R. Hurtado Rangel, **J.A. Wang**, L.F. Chen. Characterization of structural and optical properties of the mesoporous Ce-MCM-41 hybrid materials. *Journal of Materials Science: Materials in Electronics* 29(18), (**2018**) 15621-15631**.**

J. González, **J.A. Wang**, L.F. Chen, M.E. Manríquez, J. Salmones, R. Limas, U. Arellano, Quantitative determination of oxygen defects, surface Lewis acidity, and catalysis properties of mesoporous $MoO_3$/SBA-15 catalysts. *Journal of Solid State Chemistry* 263 (**2018**) 100-114.

U. Arellano, **J.A. Wang**, M. Asomoza, L.F. Chen, J. González, A. Manzo, S. Solís, V.H. Lara. Crystalline structure, surface chemistry, and catalytic properties of $Fe^{3+}$ doped $TiO_2$ sol–gel catalysts for photooxidation of 2,4–dichlorophenoxyacetic acid. *Materials Chemistry and Physics* 214 (**2018**) 247-259.

J. González, **J.A. Wang**, L.F. Chen, R. Limas, J. T. Vázquez Rodriguez, O.A. González Vargas, New insights into oxygen defects, Lewis acidity and catalytic activity of MCM-41 supported vanadia hybrid nanomaterials. *Materials Letters* 220 (**2018**) 70–73.

J. González, **J.A. Wang**, L. F. Chen, M. E. Manríquez, J. M. Domínguez. Structural Defects, Lewis Acidity and Catalysis Properties of Mesostructured $WO_3$/SBA–15 Nanocatalysts. *Journal of Physical Chemistry C* 121 (**2017)** 23988–23999.

N. de la Fuente, **J.A. Wang**, L.F. Chen, J. González, J. Salmones, J.L. Contreras, J. Navarrete. Skeletal isomerization of n-heptane with highly selective Pt/$H_3PW_{12}O_{40}$/SBA–15 trifunctional catalysts. *Catalysis Communications* 102 (**2017**) 93–97.

E. Hernández, **J.A. Wang**, L. F. Chen, M.A. Valenzuela, A.K. Dalai. Partial oxidation of methanol catalyzed with $Au/TiO_2$, $Au/ZrO_2$ and $Au/ZrO_2$-$TiO_2$ catalysts. *Applied Surface Sciences* 399 (**2017**) 77–85.

U. Arellano, Z. Wang, L.F. Chen, **J.A. Wang**, M. Asomoza, A. Estrella. $VO_x$ core-shell catalysts for one-pot oxidation and separation of refractory multiaromatic sulfur compounds in a model diesel. *Industrial & Engineering & Chemistry Research* 56 (42), **(2017)** 12080 –12091.

Dolores Silvia Solís Mendiola, Ulises Arellano Sánchez, Maximiliano Joel Asomoza Palacios, **Jin An Wang**, Lifang Chen, Francisco Tzomoantzi Morales. Bactericidal action of silver nanoparticles dispersed in silica synthesized through the sol gel method. *Journal of Materials Science and Engineering A*, 7 (9-10), (**2017**) 246–257.

U. Arellano, **J.A. Wang**, L.F. Chen, G.Z. Cao, M. Asomoza, S. Cipagauta, Oxidation/elimination of heterocyclic sulfur compounds in a biphasic system with mesostructured FeOx/Ti-MCM-41 catalysts. *Journal of Molecular Catalysis A: Chemicals* 421 (**2016**) 66–75.

Michael T. Timko, **Jin An Wang**, James Burgess, Peter Kracke, Lino Gonzalez, Cherno Jaye, Daniel A. Fischer. Roles of surface chemistry and structural defects of activated carbons in the oxidative desulfurization of benzothiophenes. *Fuel* 163 (**2016**) 223–231.

J. González**,** L.F. Chen, **J.A. Wang**, Ma. Manriquez, R. Limas, P. Schachat, J. Navarrete, J.L. Contreras. Surface chemistry and catalytic properties of $VO_X$/Ti-MCM-41 catalysts for dibenzothiophene oxidation in a biphasic system. *Applied Surface Science* 379 (**2016**) 367–376.

J.M. Ramos, **J.A. Wang**, L. F. Chen, U. Arellano, S. P. Ramirez, R. Sotelo, P. Schachat. Synthesis and catalytic evaluation of CoMo/SBA-15 catalysts for Oxidative removal of dibenzothiophene from model diesel. *Catalysis Communications* 72 (**2015**) 57–62.

U. Arellano, J.M. Shen, **J.A. Wang**, M.T. Timko, L.F. Chen, J.T. Vázquez Rodriguez, M. Asomoza, A. Estrella, O.A. Gonzalez Vargas, M.E. Llanos. Dibenzothiophene oxidation in a model diesel fuel using CuO/GC catalysts and $H_2O_2$ in the presence of acetic acid under acidic condition. *Fuel* 149 (**2015**) 15–25.

M.E. Manríquez, J.G. Hernández-Cortez, **J.A. Wang**, L.F. Chen, A. Zuñiga-Moreno, R. Gomez**.** Synthesis of metal doped lamellar double hydroxides base catalysts for acetone aldol condensation. *Applied Clay Science* 118 (**2015)** 188–194.

U. Arellano, **J.A**. **Wang,** M.T. Timko, L.F. Chen, S.P. Paredes Carrera, M. Asomoza, O.A. González Vargas, M.E. Llanos. Oxidative removal of dibenzothiophene in a biphasic system using sol-gel $Fe/TiO_2$ catalysts and $H_2O_2$ promoted with acetic acid. *Fuel* 126 (**2014**) 16–25.

M. Estrada, C. Reza, J. Salmones, **J. A. Wang,** M.E. Manríquez, J. M. Mora, M. L. Hernández, A. Zúñiga, J. L. Contreras, Synthesis of nanoporous $TiO_2$ thin films for photocatalytic degradation of methylene blue. *Journal of New Materials for Electrochemical Systems* 17 (**2014**) 23–28.

## DIRECTION OF DOCTORAL THESIS (2014-2019)

1. Alonso Piña Ernesto
   Estudio experimental del consumo y producción de $H_2$ *in-situ* en el agua procesamiento de crudos pesados mediante catálisis homogénea
   Feche ingreso: Julio de 2018.

2. Jesús Miguel Ramos Cansigno
   Títutlo de Tesis: Oxidación catalítica de compuestos de azufre de un diesel modelo en un sistema bifásico.
   Fecha de obtención de grado: 12 de noviembre de 2018

3. Julio González García
   Título de Tesis: Estudio de catalizadores de $MoO_3$ y $WO_3$ soportados en SBA-15 para la desulfuración oxidativa de un diesel modelo
   Fecha de obtención de grado: 24 de enero de 2018

4. Boris Guzmán Martínez
   Título de tesis: Estudio experimental de un reactor de lecho fluidizado para la obtención de biodiesel a partir de aceite de *Jatropha Curcas* mediante enzimas inmovilizadas
   Feche ingreso: agosto de 2017

5. Nátali De La Fuente Maldonado
   Título de la tesis: Estudio de la oxidación catalítica de 4,6-dimetildibenzotiofeno con catalizadores de heteropoliácido/SBA-15
   Feche ingreso: marzo de 2017

## DIRECTION OF MASTER THESIS (2014-2019)

1. Itzel Cruz Ramos
   Síntesis de catalizadores para la transformación de etanol a 1-butanol
   Fecha de ingreso: Enero de 2019

2. Paola Moreno Nájera
   Producción de Biodiesel mediante una mezcla sintética de aceites de microalgas con un catalizador estructurado con un líquido iónico y Zr
   Fecha de ingreso: Enero de 2019

3. Luz Margarita Balcázar Villatoro
   Título de tesis: Fotodegradación del Rojo Congo mediante fotocatálisis usando catalizadores de $Ag/CeO_2/SBA-15$.
   Fecha de ingreso: Agosto de 2017

4. Ana Rebeca Martínez Martínez
   Título de tesis: Obtención de Biodiesel Mediante Catálisis Heterogénea con CaO/SBA-15 y su análisis de ciclo de vida.
   Fecha de ingreso: Enero de 2017

5. Josué Flores Cantera (Graduado)
   Título de tesis: Estudio de catalizadores $WO_3/TiO_2$ para la desulfuración oxidativa.
   Fecha de obtención de grado: 30 de noviembre de 2018

6. Luis Fernando Gómez Sastré (Graduado)
   Título de tesis: Estudio de catalizadores ultra-dispersos para el hidroprocesamiento de petróleo.
   Fecha de obtención de grado: 26 de enero de 2017

7. Natali De La Fuente Maldonado (Graduado)
   Título de tesis: Estudio de nanoestructuras y propiedades catalíticas de catalizadores mesoporosos tipo $H_3PW_{12}O_{40}$/SBA-15.
   Fecha de obtención de grado: 26 de enero de 2017

8. Dante Esaí González Anota (Graduado)
   Título de tesis: Isomerización de n-heptano con catalizadores de Pt/$H_3PW_{12}O_{40}$/$ZrO_2$ y Pt/$H_3PW_{12}O_{40}$/Zr-MCM-41.
   Fecha de obtención de grado: 27 de julio de 2015

9. Julio González García (Graduado)
   Título de tesis: Desulfuración oxidativa de dibenzotiofeno presente en diesel con catalizadores de VOx/MCM-41 y VOx/Ti-MCM-41.
   Fecha de obtención de grado: 23 marzo de 2015

## RESPONSABLE PROJECTS OF INVESTIGATION

1. SIP-20196124. Estudio de pseudo-boehmita como enlazador en la formación de catalizadores Pt/$WO_3$-$ZrO_2$.

2. SIP-20181280. Síntesis y evaluación catalítica de catalizadores mesoporosos $MoO_3$/SBA-15.
   SIP-20171266. Estudio de Fe/$TiO_2$ sol gel catalizadores para la fotooxidación de 2,4 diclorofenoxiacético ácido.

3. SIP-20161343. Estudio de catalizadores de FeOx/SBA-15 para oxidación de compuestos azufrados en el diesel modelo.

4. SIP-20150554. Síntesis de catalizadores de VOx disperso para oxidación de compuestos organoazufrados en combustibles de petróleo.

5. SIP-20140665. Degradación catalítica de bolsas residuos de plástico de polietileno para la producción de combustibles líquidos.

## TEACHING ACTIVITIES

1. Tópicos en catálisis heterogénea (Doctorado)
2. Preparación y caracterización de catalizadores (Doctorado)
3. Laboratorio de valoración tecnológica del petroleó y sus productos (Licenciatura)