

# Abdessadek Lachgar

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## Education

Ph. D.; Materials Sciences, | 1987 | Institute of Materials, University of Nantes, France  
M. Sc; Materials Sciences, | 1983 | Institute of Materials, University of Nantes, France  
B. Sc; Chemical and Physical Sciences, | 1981 |, University of Nantes, France

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## Appointments

2002 – Present	Professor, Department of Chemistry, Wake Forest University
2013 – 2016	Director of the Wake Forest University Environmental Program
2010 – Present	Member of the Board, Center for Energy, Environment, and Sustainability
2003 – Present	Member of the Board, Center for Nanotechnology and Molecular Materials
2005, 2008 and 2010	Invited Professor by the National Research Center, Rabat, Morocco
2008 – Present	Faculty Affiliate Center for Nanotechnology and Molecular Materials
2008 – 2012	Wake Forest University Faculty Fellowship Bell Faculty
2006	Visiting Professor, Institut Galilée, University Paris XIII, Paris, France
2013, 2011, 2007, 2003	Visiting Professor at the Institute of Materials of Nantes
1997 – 2002	Associate Professor Wake Forest University
1997	Japan Society for the Promotion of Science Award to Foreign Scientists
1996	Visiting Professor, National Institute for Research in Inorganic Materials, Tsukuba, Japan (1996)
1991 – 1997	Assistance Professor Wake Forest University
1990 – 1991	Research Associate and Lecturer University of Washington, WA
1988 – 1990	Postdoctoral Associate Iowa State University, IA

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## Honors and Awards

- Fulbright US Scholar Award (2018)
- Recipient of the Southeast Regional Meeting of the American Chemical Society Industrial Innovation Award (2015)
- Empowering of Pakistani Women through translational research in the sciences: Waste-to-Energy Conversion, and Water Purification Technology Development. PI. Lachgar, CoPI. Memon. Funding source: National Academies and US Agency for International Development; 2015 – 2018 .
- Biochar and Hydrochar Applications for Agriculture and Energy Applications in Peru. Funding source: Blue Moon Fund; 2014 – 2015.
- Design and Self-Assembly of Cluster-Based Materials. PI: Lachgar. Funding source: NSF; 2001 – 2004; renewed 2005 – 2008.
- Molecular building blocks approach to functional materials: Design and Synthesis of Metal-Organic Materials for Selective filtration and wastewater purification. PI: Lachgar. Funding source: Reynolds American Inc.; 2011-2013 renewed 2013 – 2015.

- Acquisition of a Powder X-ray Diffractometer for Research and Education at Wake Forest University. PI: Lachgar, CoPIs: Carroll, Jurchescu, Nofle, and Thacker; Funding Agency: NSF; 2011.
- The Center for Energy, Environment and Sustainability. PIs Miles Silman, Lachgar, Williams, Smith; 1 million\$ for five years, 2010.
- Supplement: Design and Self-Assembly of Cluster-Based Materials; Funding source: NSF; 2005
- International Fellowship from the International Center for Materials Research, UC Santa Barbara: 5k funds provided to graduate student Lei Chen to pursue research at Kyoto University to develop materials for hydrogen storage and CO<sub>2</sub> sequestration 05/12-08/12.
- Richter Award fund provided to Lei Chen to pursue research at Kyoto University to develop materials for hydrogen storage and CO<sub>2</sub> sequestration May-August 2012.
- Richter undergraduate research fellowship awarded to Noah Grade to pursue summer undergraduate research at the institute of materials Jean Rouxel, Nantes, France. 6k. May 12-July 31. 2013 The research focuses on the preparation and characterization of materials for use in solid oxide fuel cells (SOFCs)

### Teaching awards

2010-11 Excellence in Entrepreneurship Award for course development and Teaching Excellence, WFU, Center for Innovation, creativity, and entrepreneurship, and the entrepreneurship society.

### Synergistic Activities

Associate Editor, Research Letters in Inorganic Chemistry (2008-present)

Associate Editor, International Journal of Inorganic Chemistry (2009-present)

Organizer of the International Workshop on Phosphate based Materials for Energy Storage, Environment, and Biological Applications: Better Phosphates for a Better World, Sept. 19-22, 2012 El Jadida, Morocco.

Organizer of the Second Meeting on Materials for Energy, Health and Environment: Research and Education – MEHERE2, Nov. 22-26, 2010, Casablanca

Co-organizer of the First North African Crystallographic Conference, NACC1, Nov. 23-26<sup>th</sup>, 2010

Co-organizer of the fourth international conference of Africa-MRS, Tanzania, Dec. 10-14<sup>th</sup>, 2007.

Co-organizer of the third international conference of Africa-MRS, Marrakesh, Dec. 6-10<sup>th</sup>, 2005.

### Collaborators & Other Affiliations

#### a. Collaborators:

H.-J. Meyer (U. Tübingen), Aziz El Jazouli (University of Casablanca), J. Martin (NC-state University); Olivier Joubert (Institute of Materials of Nantes), Slavi Sevov (U. Notre Dame), Arnold Guloy (University of Houston), Miles Silman (Wake Forest University), Michel Latroche (Institut de Chimie et des Matériaux, Paris Est), Bouchta Sahraoui (University of Angers), Xu Zhengtao (City University of Hong Kong), Seeram Ramakrishna, (Center for Nanofibers & Nanotechnology, National University of Singapore), Mohamed Eddaoudi (KAUST), Ilias Belharouak (Qatar Foundation), Khalil Amine (Argonne National Lab), Santiago Gracia-Granda (University of Oviedo), Najma Memon (University of Sindh, Pakistan). Kader Kara (UCF).

#### b. Graduate and Postdoctoral Advisors

**Graduate advisors:** Professor J. Rouxel, Professor M. Tournoux, Dr. Y. Piffard (Institut des Matériaux Jean Rouxel, Nantes)

**Postdoctoral Advisors:** Professor John. D. Corbett (Iowa State University), Professor James M. Meyer (University of Washington)

**c. Thesis Advisor and Postgraduate Sponsor:** Total GS advised (19); Total PD advised (9)  
 Dr. Bangbo Yan (Prof. U. Western Kentucky), Dr. Jian-Jun Zhang (Prof. Dalian University of Technology), Dr. Changkun Xia (Prof. Jiangsu University), Dr. Mostapha Taibi (University of Quebec at Montreal, Canada), Dr. T. Duraisammy (Nanodynamics Inc, Columbus, Ohio), Dr. C. V. Amburose (University of Kentucky). Dr. Andrew Zhou (U. Arkansas), Dr. Kevin Zhao (University of British Columbia, Vancouver, Canada), Dr. E. V. Anokhina (diseased), J. Sitar (High school teacher, Dallas school system), Dr. O. Reckeweg (Max Planck Institute, Stuttgart), Dr. H. H. Womelsdorf (Siemens), Dr. A. Nägele (U. Stuttgart), Dr. M. Ströbele (U. Tübingen).

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## PUBLICATIONS

(Total 128, listing papers published in the past 5 years 2017 to 2022)

1. Norman Fraley, Marcus Wright, Abdessadek Lachgar. "Characterizing Reaction Space in the Continuous-Flow Esterification of Oleic Acid Using a Sulfonated Hydrothermal Carbon Catalyst", *Chemistry Select* 2022, 7, e202200287 (1 of 9). doi.org/10.1002/slct.202200287
2. Fabiana Avolio Sayao, Xiao Ma, Maria Valnice Boldrin Zanoni, and Abdessadek Lachgar. "Modulating the Photoelectrocatalytic Conversion of CO<sub>2</sub> to methanol and/or H<sub>2</sub>O to Hydrogen at Phosphorene modified Ti/TiO<sub>2</sub> electrode", *Journal of Materials Chemistry C*, 2022, DOI: 10.1039/D2TC01814D
3. Safia S. Memon, Najma Memon, Shahabuddin Memon, Abdesadek Lachgar, and Abdullah Memon. "Batch to batch variation study for biodiesel production by hydrothermal carbon catalyst: preparation, characterization and its application", *Mater. Res. Express* 7 (2020) 015521. <https://doi.org/10.1088/2053-1591/ab692b>
4. Shiba P. Adhikari, Zachary D. Hood, Sara Borchers, Marcus Wright, and Abdou Lachgar. "Biofuel Production With Sulfonated High Surface Area Carbons Derived From Glucose", *Chemistry Select* 2020, 5, 1534–1538. DOI: 10.1002/slct.201901055.
5. Beatriz Costa e Silva, Kallyni Irikura, Jader Barbosa Silva Flor, Rodrigo Morais Menezes dos Santos, Abdessadek Lachgar, Maria Valnice Boldrin Zanoni. "Electrochemical preparation of Cu/Cu<sub>2</sub>O-Cu(BDC) metal-organic framework electrodes for photoelectrocatalytic reduction of CO<sub>2</sub>", *Journal of CO<sub>2</sub> Utilization* 42 (2020) 101299. <https://doi.org/10.1016/j.jcou.2020.101299>
6. Debora N. dos Santos, Igor V. Pedrosa, Celia R. R. Fernandes, Abdou Lachgar, Marcio Neli, Rafael Garrett, Yiu Lau Lam, and Marcelo M. Pereira. "Catalytic sugarcane bagasse transformation into a suitable biocrude for hydrocarbon production in typical refinery processes" *Sustainable Energy Fuels*, 2020, 4, 4158–4169.
7. Alysso Stefan Martins, Abdou Lachgar, Maria Valnice Boldrin Zanoni. "Sandwich Nylon/stainless-steel/WO<sub>3</sub> membrane for the photoelectrocatalytic removal of Reactive Red 120 dye applied in a flow reactor" *Separation and Purification Technology* 237 (2020) 116338.
8. Tiouitchi, G.; Ali, M. Ait; Benyoussef, A.; Hamedoun, M.; Lachgar, A.; et al. "An easy route to synthesize high-quality black phosphorus from amorphous red phosphorus" *Materials Letters* (2019), 236, 56-59.
9. F. Dardar, C. Day, A. El Jazouli, S. Sebt, A. Lachgar, "Synthesis and characterization of a new layered gallium phosphonate oxalate (C<sub>2</sub>H<sub>10</sub>N<sub>2</sub>)<sub>0.5</sub>[Ga<sub>3</sub>(PO<sub>3</sub>CH<sub>3</sub>)<sub>4</sub>(C<sub>2</sub>O<sub>4</sub>)]·H<sub>2</sub>O" *Journal of Chemical Crystallography*, (2019) 49: 44-51.
10. Shiba P. Adhikari, Zachary D. Hood, Sara Borchers, Marcus Wright, and Abdou Lachgar, "Biofuel production with sulfonated high surface area carbons derived from glucose" *ChemistrySelect*, manuscript # slct.201901055R1, accepted Nov. 6, 2019.
11. Tahira Qureshi, Najma Memon, Saima Q. Memon, Handan Yavuz, Abdesadek Lachgar, "Evaluation of hydrocar efficiency for simultaneous removal of diclofenac and ibuprofen from aqueous system using surface response methodology" *Environ Sci Pollut Res* (2019) 26: 9796 – 9804

12. Memon, Safia; Memon, Najma; Memon, Shahbuddin; and Lachgar, Abdessadek "Batch to batch variation study for biodiesel production by hydrothermal carbon catalyst: Preparation, characterization and its application" *2020 Mater. Res. Express* 7 015521.
13. Shiba P. Adhikari, Zachary D. Hood, Vincent W. Chen, Karren L. More, and Abdou Lachgar, "g-C<sub>3</sub>N<sub>4</sub> / nitridized Sr<sub>2</sub>Nb<sub>2</sub>O<sub>7</sub> nanocomposite as an efficient photocatalyst for hydrogen evolution under visible light irradiation" *Sustainable Energy Fuels* (2018), 2, 2507–2515.
14. Zachary D. Hood, Shiba P. Adhikari, Samuel F. Evans, Hui Wang, Yunchao Li, Amit K. Naskar, Miaofang Chi, Abdou Lachgar, M. Parans Paranthaman, "Tire-derived carbon for catalytic preparation of biofuels from feedstocks containing free fatty acids" *Carbon Resources Conversion* (2018) 165–173.
15. Hui Li, Peng Wen, Adam Hoxie, Chaochao Dun, Shiba Adhikari, Qi Li, Chang Lu, Dominique Itanze, Lin Jiang, David Carroll, Abdou Lachgar, Yejun Qiu, Scott Geyer, "Interface engineering of colloidal CdSe quantum dots thin films as acid-stable photocathodes for solar-driven hydrogen evolution" *ACS Applied Materials & Interfaces* 10 (2018) 17129–17139.
16. Shiba P. Adhikari, Zachary D. Hood, and Abdou Lachgar, "Semiconductor heterojunctions for enhanced visible light photocatalytic H<sub>2</sub> production" *MRS Advances* (2018) 1–8.
17. S. Lamrhari, Z. El Khalidi, S. Krimi, M. Haddad, M. Couzi, A. Lachgar, A. El Jazouli "Synthesis and structural characterization of phosphate-based Nasiglasses Na<sub>3</sub>Ca<sub>1-x</sub> Mn<sub>x</sub>Ti(PO<sub>4</sub>)<sub>3</sub> (0 ≤ x ≤ 1)" *J. Mater. Environ. Sci.* (2018), 9(11), 3009-3018.
18. Fatima Ezzahraa Dardar, Michael Gross, Saida Krimi, Michel Couzi, Abdessadek Lachgar, Said Sebti, Abdelaziz El Jazouli, "Synthesis, structural characterization and ionic conductivity of mixed alkali titanium phosphate glasses" *Mediterr. J. Chem.* (2018), 7(5), 328-336.
19. Tchalala, Mohamed Rachid; Kara, Abdelkader; Lachgar, Abdessadek; et al. "Silicon nanoparticles synthesis from calcium disilicide by redox assisted chemical exfoliation" *Materials Today Communications* (2018), 16, 281-284.
20. Tiouitchi, G.; Ali, M. Ait; Benyoussef, A.; Hamedoun, M.; Lachgar, A.; et al. "An easy route to synthesize high-quality black phosphorus from amorphous red phosphorus" *Materials Letters* (2019), 236, 56-59
21. F. Dardar, C. Day, A. El Jazouli, S. Sebti, A. Lachgar, Synthesis and characterization of a new layered gallium phosphonate oxalate (C<sub>2</sub>H<sub>10</sub>N<sub>2</sub>)<sub>0.5</sub>[Ga<sub>3</sub>(PO<sub>3</sub>CH<sub>3</sub>)<sub>4</sub>(C<sub>2</sub>O<sub>4</sub>)]·H<sub>2</sub>O, *Journal of Chemical Crystallography*, (2018)
22. Shiba P Adhikari and Abdou Lachgar "Effect of particle size on the photocatalytic activity of BiNbO<sub>4</sub> under visible light irradiation", *J. Phys.: Conf. Ser.* 758 (2016) 012017. DOI: <http://dx.doi.org/10.1088/1742-6596/758/1/012017>
23. Zachary D. Hood<sup>†</sup>, Shiba P. Adhikari<sup>‡</sup>, Yunchao Li, Amit K. Naskar, Legna Figueroa-Cosme, Younan Xia, Miaofang Chi, Marcus W. Wright, Abdou Lachgar, and M. Parans Paranthaman. "Novel acid catalysts from waste tire-derived carbon: Application in waste-to-biofuel conversion" *ChemistrySelect*, 2 (2017) 4975 (Selected Journal Cover) <sup>‡Both authors as first authors</sup>. DOI: [10.1002/slct.201700869](https://doi.org/10.1002/slct.201700869)
24. Shiba P. Adhikari, Zachary D. Hood, Hui Wang, Rui Peng, Hui Li, Vincent W. Chen, Karren L. More, Zili Wu, Scott Geyer, and Abdou Lachgar, "Enhanced Visible Light Photocatalytic Water Reduction of a g-C<sub>3</sub>N<sub>4</sub>/SrTa<sub>2</sub>O<sub>6</sub> heterojunction" *Applied catalysis b, environmental* 217 (2017) 448-458. <https://doi.org/10.1016/j.apcatb.2017.05.092>
25. Yan-Hong Zhang, Shiba P. Adhikari, Cynthia Day, and Abdou Lachgar "Syntheses, Crystal Structures and Characterization of Ca(II) and Ba(II) Coordination Polymers Derived from Thiophene-2,5-dicarboxylate" *Chinese Journal of Inorganic Chemistry* 33 (2017) 1305-1312. [https://caod.oriprobe.com/articles/51398440/Syntheses\\_Crystal\\_Structures\\_and\\_Characterization.htm](https://caod.oriprobe.com/articles/51398440/Syntheses_Crystal_Structures_and_Characterization.htm)

26. Shiba P Adhikari and Abdou Lachgar “Effect of particle size on the photocatalytic activity of  $\text{BiNbO}_4$  under visible light irradiation”, **J. Phys.: Conf. Ser.** 758 (2016) 012017. DOI: <http://dx.doi.org/10.1088/1742-6596/758/1/012017>