Abdulaziz Al Anazi, Ph.D.

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Professional Summary

Assistant professor in the chemical engineering department at King Saud University focusing on novel nanomaterials and the catalytic reactions for energy and environmental applications.

Education

- **Ph.D.**: Environmental Engineering, 12/2018 **THE UNIVERSITY OF CINCINNATI** - Cincinnati, OH.
- Master of Science: Occupational Health, 12/2010 THE UNIVERSITY OF TOLEDO - Toledo, OH.
- **Bachelor of Science**: Chemical Engineering, 2008 **THE UNIVERSITY OF TOLEDO** - Toledo, OH.

Experience

Assistant professor of Chemical and Environmental Engineering, 05 /2021 to Present

King Saud University – Riyadh, Saudi Arabia

- Teaching courses; (i) Material science and engineering, (ii) water treatment processes, (iii) Environmental Biotechnology, (iv) Metrology and metal extraction
- Current research focusing on synthesis of nanomaterial/ technology for environmental applications including carbon reduction and utilization, degrading water emerging contaminants and advanced oxidation for water reuse.
- Innovative development of catalytic membrane for dual applications of desalination and contaminants degradation
- Supervising master students in the field of water treatment.
- Council member for Master of Science in nanoscience and technology joint program
- Council member for the department of chemical engineering

Postdoctoral Research Fellow, 11/2018 to 04/2021

University of Cincinnati – Cincinnati, OH

- Developing Advanced oxidation process for the removal of contaminants of emerging concern from water.
- Synthesized various catalytic organic and inorganic nanomaterial for degrading water contaminants.
- Characterization of synthesized nanomaterial using XRD, SEM, XPS, FTIR, HR-TEM, NMR, and BET.
- Operate analytical instrumentation; LC-MS, HPLC, GC, IC, and TOC.
- TA for Physical-Chemical Processes for Water Quality Control and Water & Wastewater Treatment.
- Work with EPA scientists to advance research and gain deeper understanding of magnetic nanoparticles.
- Authored professional scientific papers for publishing in peer-reviewed high impact journals.

Research and Development Engineer, 05/2018 to 11/2018

City of Cincinnati Water Treatment - Cincinnati, OH

- Analyze heavy metals in water using ICP-MS.
- Implanting R&D pilot study on disinfection of wastewater with Peracetic Acid (PAA) and UV Combined Treatment leading to operational cost saving of 1 million dollars over 3 fiscal years.
- Investigated the reaction mechanism between Peracetic Acid (PAA) and UV.
- Biological and chemical oxygen demand analysis.
- Bacterial estimation (Fecal and E- coli) using membrane filtration.

Research Scientist, 11/2011 to 11/2013

U.S. Environmental Protection Agency – Cincinnati, OH

- Synthesized and characterized ferrite-based catalysts.
- Analyzed synthesized materials using scanning electron microscope (ESEM), High resolution TEM (HR-TEM), Liquid chromatography–mass spectrometry quadrupole time-of-flight (LCMS-MS QTOF) Fourier transform infrared spectrometer (FT IR), high-performance liquid chromatograph (HPLC), Brunauer, Emmett and Teller (BET)-based surface area analyzer, and zeta potential analyzer (for zeta potential as well as particle size).
- Presented findings from research and experiments to new collaborators.
- Developed top-notch written and verbal communication skills from working with various personalities across multiple disciplines (water, air, toxicology, biology and more) to enhance collaboration and reach collective targets.

Corporate Industrial Hygiene, 01/2010 to 01/2011

FIRST SOLAR, INC - Perrysburg, OH

- Completed an additive effect assessment.
- Studied the electromagnetic interference of factory's special equipment with employees' cardio implant.
- Participated in multi-disciplinary teams, presented case studies and give the EHS input.
- Developed QA/QC protocol for biomonitoring program.
- Developed various chemicals sampling strategies and preformed air and water sampling.
- Completed noise survey, personal and area, combustible dust study, job hazard analysis, and new Instrument safety approval.

Skills

- Water Treatment, reuse application
- Membrane optimization
- Novel Material Synthesis
- Chemical/Nanomaterial Engineering
- Environmental Engineering
- Advanced Oxidation Processes
- Health and Safety

- Catalytic removal of water contaminants
- Publishing in high impact journals
- Grant and proposal writing
- Lab-based learning models
- LC-MS, HPLC, IC, TOC, SEM, XPS, HR-TEM, XRD, FTIR, GC, NMR, ICP-MS and BET
- Research and development, design of experiment

Publications

- Sayed, Murtaza, Bangxing Ren, Atif Mossad Ali, **Abdulaziz Al-Anazi**, Mallikarjuna N. Nadagouda, Adel A. Ismail, and Dionysios D. Dionysiou. "Solar light induced photocatalytic activation of peroxymonosulfate by ultra-thin Ti³⁺ self-doped Fe₂O₃/TiO₂ nanoflakes for the degradation of naphthalene." Applied Catalysis B: Environmental (2022): 121532.
- Al-Anazi, Abdulaziz. "Iron-based magnetic nanomaterials in environmental and energy applications: a short review." Current Opinion in Chemical Engineering 36 (2022): 100794.
- Gaballah, Mohamed S., Xin Li, Zijia Zhang, **Abdulaziz Al-Anazi**, Hui Sun, Mostafa Sobhi, Mperejekumana Philbert, Mohamed A. Ghorab, Jianbin Guo, and Renjie Dong. "Determination of Tetracycline, Oxytetracycline, Sulfadiazine, Norfloxacin, and Enrofloxacin in Swine Manure Using a Coupled Method of On-Line Solid-Phase Extraction with the UHPLC–DAD." Antibiotics 10, no. 11 (2021): 1397.
- Al-Anazi, Abdulaziz, et al. "Novel franklinite-like synthetic zinc-ferrite redox nanomaterial: synthesis, and evaluation for degradation of diclofenac in water." Applied Catalysis B: Environmental 275.C (2020).
- Achal Garg, Vasudevan Namboodiri, Bruce Smith, Abdulaziz AlAnazi, Brindha Murugesan "Disinfection of Wastewater with PAA And UV Combined Treatment: A Pilot Study" WATER ENVIRONMENT FEDERATION Disinfection & Reuse Symposium July 29–31, 2018 | Portland, OR.

- Al-Anazi, Abdulaziz, et al. "Cobalt ferrite nanoparticles with controlled composition-peroxymonosulfate mediated degradation of 2-phenylbenzimidazole-5-sulfonic acid." Applied Catalysis B: Environmental 221 (2018): 266-279.
- Al-Anazi, Abdulaziz, et al. "Cobalt ferrite nanoparticles with controlled composition-peroxymonosulfate mediated degradation of 2-phenylbenzimidazole-5-sulfonic acid." Oral presentation ACS 252nd national meeting in Philadelphia, PA. USA. August 2016.
- Al-Anazi, Abdulaziz, et al. " ferrite nanoparticles with controlled composition-for the degradation of emerging contaminants." Oral presentation ACS 251st national meeting in San Diego, CA. USA. April 2016.
- Al-Anazi, Abdulaziz, et al. " ferrite nanoparticles with controlled composition-for the degradation of emerging contaminants." Poster presentation ACS 248th national meeting in San Francisco, CA. USA. August 2014.
- Bangxing Ren, Changseok Han, **Abdulaziz H. Al Anazi**, Mallikarjuna N. Nadagouda, and Dionysios D. Dionysiou, Chapter Iron-Based Nanomaterials for the Treatment of Emerging Environmental Contaminants, in Interactions of Nanomaterials with Emerging Environmental Contaminants. Accepted to ACS Symposium Series, American Chemical Society, September 2013.
- Abdulaziz H. Al Anazi, Mallikarjuna N. Nadagouda, Changseok Han, and Dionysios D. Dionysiou, Synthesis of Novel Ferrite Based Recyclable Catalyst Used to Clean Dye and Emerging Contaminates from Water. Poster presentation at the 2012 Oesper Symposium, University of Cincinnati, October 12, 2012.

Professional Service

- Reviewer for the ACS Nano journal issued by ACS.
- Reviewer for the Applied Catalysis B: Environmental journal issued by Elsevier.
- Reviewer for the Environmental Progress & Sustainable Energy issued by Wiley.
- Reviewer for the Current Opinion in Green and Sustainable Chemistry issued by Elsevier.
- Reviewer for the Chemical Engineering journal issued by Elsevier.
- Editorial assistant for Journal of Environmental Engineering (ISSN (print): 0733-9372 | ISSN (online): 1943-7870)