MELIKE DIZBAY-ONAT, Ph.D.

Department of Mechanical Engineering
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EDUCATION

Postdoctoral Scholar, College of Arts and Science / Center for Community Outreach Development

University of Alabama at Birmingham (UAB) Birmingham, AL

- *Advisor:* Dr. Michael Wyss 2018

The Center for Community OutReach Development (CORD)'s main focus is on advancing K-12 science education in Birmingham area and throughout the state and nation by developing programs that will decrease the regional, racial and gender disparity in science, math and engineering.

Ph.D., Interdisciplinary Engineering /Environmental, Health and Safety 2015

University of Alabama at Birmingham (UAB) Birmingham, AL

- *Advisor:* Dr. Uday K. Vaidya (Professor)
- *GPA:* 4.00/4.00
- *Dissertation:* "Natural fiber derived activated carbons for industrial emissions minimization and capture"

This study focused on reduction of carbon footprint and VOCs from industrial emissions. Several methods have been investigated to prepare activated carbon composites from natural fibers. Physical adsorption properties of activated carbon composites including porosity, SEM and adsorption capacity measurements have also been obtained.

Master of Electrical Engineering, Electrical and Computer Engineering 2008

Auburn University Auburn, AL

- *Advisor:* Dr. Hulya Kirkici (Professor)
- *GPA:* 3.47/4.00
- *Project:* "Transmission characteristics of laser beam through a plasma"

In this work a "wire-hollow-cathode" device has been used to study laser beam propagation through plasmas. Helium has been used as the operating gas in the hollow-cathode discharge. Understanding of voltage, current, optical emission characteristic of plasma, and beam shape measurement of a HeNe laser beam propagating through this plasma have been developed.

Master's Degree, Physics 2006

Auburn University Auburn, AL

Bachelor of Science, Physics 2000

Balikesir University Balikesir,Turkey

RESEARCH EXPERIENCE

Graduate Research Assistant January 2010 - April 2015

UAB Materials Processing and Applications Development (MPAD) Center
UAB Environmental Health Sciences, School of Public Health

- Applied a variety of fabrication techniques including compounding, thermoforming, hand layup and vacuum assisted resin transfer molding (VARTM), Long Fiber Thermoplastic (LFT) processing, compression molding, wet laid
- Knowledge in numerous materials characterization skills: Thermal Analysis, Spectroscopy, Electron microscopy (TGA, TMA, DSC, FT-IR, SEM)
- Team brainstorming, collaboration, and execution
- Mentored the student and led; Outreach, education and recruitment of K-12 students
- Poster, proposal writing and conference presentations, journal article submissions

TEACHING EXPERIENCE

Assistant Professor January, 2019 – Present

University of South Alabama
William B. Burnsed, Jr. Department of Mechanical Engineering

- Assigned to teach undergraduate courses:
  EG 315 Mechanics of Materials, EG 220 Electrical Circuits, ME 336 Materials Science Lab. (Spring 2019)
  ME 326 Material Science, ME 336 Materials Science Lab. (Fall 2019, Spring 2020)

  ME 414 Capstone Design, Co-advisor (Spring 2020)

Engineering Institute Director August 2016 – December 2018

University of Alabama at Birmingham (UAB)
Center for Community OutReach Development (CORD*)*

- Developed and implemented curriculum for Engineering Institute classes that prepares high school students to teach engineering using hands-on experiments
- Evaluated program effectiveness

Science & Engineering Hands-on Coordinator December 2015 - December 2018

UAB CORD

- Developed hands on physical science experiments for Birmingham City Middle Schools for Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) Birmingham
- Evaluated program effectiveness

Summer Camp Director May 2016 - July 2016

UAB CORD

- Supervised summer camps for rising 8th graders
- Provided coaching to effective practices

Science and Math Director December 2015 - May 2016

UAB CORD

- Developed and implemented NIH-funded new model of science education for underserved minority students
- Implemented strategies for success in STEM education at the university level and encouraged students to pursue a STEM career

Lab Instructor December 2014 - April 2015

UAB Material Science and Engineering Department

- Supervised Ceramic Materials class lab (MSE 470) which covers mechanical, thermal, and electrical behavior of ceramic materials in terms of microstructure and processing variables
- Mentored students laboratory practices

Graduate Teaching Assistant August 2007 - May 2008

Auburn University Electrical and Computer Engineering Department

- Supervised Electrical Engineering I and Engineering II labs
- Guided and evaluated performance sophomore and senior students in lab sessions

Graduate Teaching Assistant August 2003 - May 2007

Auburn University Physics Department

- Supervised calculus based Physics I & Physics II labs
- Evaluated performance of students in lab sessions
- Discussed and managed lab arrangements with faculty members
- Graded quizzes, lab reports and tests

PUBLICATIONS

Peer Reviewed Journal Publications

- **Dizbay-Onat M.,** Wyss M., "Preparing 8th grade Students to Excel in Physical Science: Handson Physics (HOP)!". *Journal of STEM Outreach*, Vol.1, 2018
- **Dizbay-Onat M.**, Vaidya U.K., and Lungu C.T., "Applicability of Industrial Sisal Fiber Waste Derived Activated Carbon for Removal of Volatile Organic Compounds (VOCs)". *Fibers and Polymers*, 19(4), p: 805-811, 2018
- **Dizbay-Onat M.**, Vaidya U.K., and Lungu C.T., "Effects of Carbonization Parameters on Industrial Fiber Waste Derived Activated Carbon". *Industrial Crops and Products Journal*, Vol. 95, p:583–590, 2017
- **Dizbay-Onat M.**, Vaidya U.K., Balanay J.A. and Lungu C.T., "Preparation and Comparison of Physical Adsorption Properties of Natural Fiber Derived Activated Carbons". *Adsorption Science and Technology Journal*, p:1-17, 2017
- Hassen A.A., **Dizbay-Onat M.**, Bansal D., Bayush T., Vaidya U.K., "Thermal and Mechanical Characterization of Polypropylene Filled with Naturally Driven $CaCO_3$ from Eggshell". *Polymers and Polymer Composites Journal*, Vol. 23, No.9, p: 653-662, 2015

Proceedings

- **Dizbay-Onat M.**, Vaidya U.K. and Lungu C.T., "Natural Fiber Based Activated Carbons for Industrial Emissions Minimization and Capture", **Conference Paper**, CAMX'14, Orlando, FL, October 2014
- **Dizbay-Onat M.**, Vaidya U.K. and Lungu C.T., Carbon Capture with Natural Fiber-Based Composite Adsorbents", **Conference Paper**, 15th European Conference on Composite Materials (ECCM15) in Venice, Italy, June 2012

Posters & Presentations

- **Dizbay-Onat M.**, and Akscyn R., "UAB-CORD (Community OutReach Development) and GEAR UP-Birmingham (Gaining Early Awareness and Readiness for Undergraduate Programs) Collaboration, Poster Presentation, STEM Teaching and Learning Conference, Savannah, GA, March 2018
- **Dizbay-Onat M.,** and Akscyn R., "UAB-CORD (Community OutReach Development) and GEAR UP-Birmingham (Gaining Early Awareness and Readiness for Undergraduate Programs) Collaboration, Presentation, Postdoctoral Research Day, UAB, Birmingham, AL, February 2017
- **Dizbay-Onat M.**, Vaidya U.K and Lungu C.T, "Preparation and Characterization of Sisal derived Activated Carbon for Toluene Adsorption", Poster Presentation, Tennessee Valley Section of the American Industrial Hygiene Association Fall Conference and PDC, Knoxville, TN, October, 2014
- Hassen A.A., **Dizbay-Onat M.**, Bansal D., Bayush T., Vaidya, U.K., "Thermal and Mechanical Characterization of Polypropylene Filled with Naturally Driven CaCO3 from Eggshell", Poster Presentation, Workshop on Thermal Analysis and Rheology of Polymeric Materials Birmingham, AL, May 2014
- **Dizbay-Onat M.**, Vaidya U.K. and Lungu C.T, "Natural Fiber and Egg Shell Based Activated Carbons for Industrial Emissions Minimization and Capture", Oral presentation, Deep South Center for Occupational Health & Safety Dillon – Carnahan Research Symposium, Birmingham, AL, April 2014
- **Dizbay-Onat M.**, Vaidya U.K. and Lungu C.T., "Preparation of High Microporosity Natural Fiber Derived Activated Carbon for Respiratory Application", Poster Presentation, 33th International Activated Carbon Conference, Orlando, FL, February 2014
- **Dizbay-Onat M.**, Vaidya U.K and Lungu C.T., "Effects of Carbonization and Activation Parameters on Natural Fiber Derived Activated Carbons", Poster Presentation, NSF-The Science and Technology Open House, Montgomery, AL, February 2014
- **Dizbay-Onat M.**, Vaidya U.K and Lungu C.T., " High Porosity Activated Carbon Derived From Natural Fibers For Respiratory Filter Application", Poster Presentation, International Porous and Powder Materials Symposium and Exhibition, Izmir, Turkey, September 2013
- **Dizbay-Onat M.**, Vaidya U.K., Floyd Evan and Lungu C.T "Preparation of High Microporosity Natural Fiber Derived Activated Carbon for Respiratory Application", Poster Presentation, NSF-The Science and Technology Open House, Montgomery, AL, April 2013
- **Dizbay-Onat M.**, Vaidya U.K., Floyd Evan and Lungu C. "Preparation and Characterization of Sisal Derived Activated Carbon for Respiratory Protection Applications", Poster Presentation, AIHce 2013, Montreal, Canada, May 2013
- **Dizbay-Onat M.**, Vaidya U.K., "Natural Fibers and Egg Shells Waste for Filtration Products", Presentation, NSF Workshop on Emerging Technologies for Sustainable Green Materials and Products, UAB, Birmingham, AL, July 2012
- **Dizbay-Onat M.**, Vaidya U.K., "Carbon Dioxide Capture using Eggshell based Activated Carbons", Poster Presentation, NSF-Science and Technology Open House,Tuskegee University, AL, April 2012
- **Dizbay-Onat M.**, Brown D., Onat L., Roy L., Ghossein H., "Carbon Dioxide Capture using Eggshell based Activated Carbons", Presentation, Graduate Student Research Day, UAB, Birmingham, AL, February 2012
- **Dizbay-Onat M**., Vaidya U.K., Balanay J.A, and Lungu C.T., "Carbon Capture with Natural Fiber-Based Activated Carbons", Poster Presentation, SPE Global Plastics and Environmental Conference (SPE GPEC 2011), Atlanta, GA, October 2011
- **Dizbay-Onat M**., Vaidya U.K. and Lungu C.T.,"Carbon Capture with Natural Fiber based Activated Carbon Composites", Poster presentation, SPE Automotive Composites Conference & Exhibition (ACCE), Detroit, MI, September 2011

RESEARCH FUNDING

- NSF EPSCoR RII Track-4: Internal Competition, A Novel Method for Preparation of Activated Recycled Carbon Fiber Mats for Carbon Dioxide (CO_2) Filtration, Role: **PI**, 2020, Submitted.
- EPS1158862 - NSF EPSCoR Graduate Research Scholar Program (GRSP) RII- Nano and Biomaterials Thrust, Round 9 Recipient, Natural Fiber and Egg Shell Based Activated Carbons for Industrial Emissions Minimization and Capture, Role: **PI**, 2014
- EPS1158862 - NSF EPSCoR Graduate Research Scholar Program (GRSP) RII- Nano and Biomaterials Thrust, Round 8 Recipient , Natural Fiber and Egg Shell Based Activated Carbons for Industrial Emissions Minimization and Capture, Role: **PI**, 2013
- EPS1158862 - NSF EPSCoR Graduate Research Scholar Program (GRSP) RII- Nano and Biomaterials Thrust Round 7 Recipient, Carbon Capture and Control of Industrial Emissions, Role: **PI**, 2012
- 2T42OH008436 - National Institute for Occupational Safety and Health (NIOSH), Deep South Center for Occupational Health & Safety, Pilot/Small Project Research Training, Student Grant Award, Natural Fiber and Egg Shell Based Activated Carbons for Industrial Emissions Minimization and Capture, Role: **PI**, 2012
- 1137681 -NSF Center for Research Excellence in Science & Technology (CREST) Project, Role: **Research Assistant,** Processing, Performance Evaluation, and Technology Transition of Advanced Green biocomposites to products**,** 2012-2015
- DE-EE-0005580- The U.S. Department of Energy (DOE)/Graduate Automotive Technology Education (GATE) Project , Nonwovens for Emission Reduction, Role: **Research Assistant,** 2010-2015

SCHOLARSHIPS and AWARDS

2018

- UAB CORD Appreciation Certificate
- UAB Postdoctoral Travel Award

2017

- UAB Postdoctoral Research Day, Third Place Presentation Award
- UAB Outstanding Postdoctoral Award
- 2017 SACNAS - ASSIST Travel Award/National Science Foundation (Grant #EEC-1548197)
- COACh Travel Assistance Award
- Recognized Reviewer - Bioresource Technology Journal

2015 UAB Department of Materials Science and Engineering - Achievement Award

2014

- UAB Department of Materials Science and Engineering - NSF EPSCoR Scholarship Award
- UAB Department of Material Science and Engineering - Student Poster Award
- NSF Science &Technology Open House, Third Place Poster Presentation Award
- American Society of Safety Engineers (ASSE)- Richard Buckley Doctoral scholarship
- American Industrial Hygiene Association (AIHA)- Paustenbach Scholarship

2013

- Graduate Student Travel Award, UAB
- Alabama Composite Conference (ACC), Third Place Poster Presentation Award
- Alabama Composite Conference (ACC), Appreciation Award

2012 Graduate Student Research Day, UAB, Second Place Presentation Award

2011 SPE- Automotive Composites Conference & Exhibition, Third Place Poster Presentation Award

2006 Auburn University Regional Science Olympiad Tournaments, Appreciation Award

2003-2008 Auburn University, Teaching Assistant (full tuition waiver) Award

1996-2000 TCMB- Central Bank of the Republic of Turkey Undergraduate Scholarship Award

2000 Balikesir University-Turkey, Third Highest Undergraduate GPA Award

PROFESSIONAL ACTIVITIES AND SERVICES

- **Reviewer:** Journal of Inorganic and Organometallic Polymers and Materials
  Composites Part B
  International Journal of Chemical Reactor Engineering
  Bioresource Technology
- **Editorial Board:** American Journal of Agriculture and Forestry
- **Judge:** UAB-CORD Regional Science and Engineering Fair, 2016-2018
  CORD Summer Science Program
  Alabama School of Fine Arts (ASFA) Math/Science Senior Research Symposium, 2016
  Auburn University Regional Science Olympiad 2006 Tournament
  Auburn University Explore Day (for 5th - 8th grades)
- **Organization Committee**: Turkish American Association of Alabama (TAAA), 2016- present
  Alabama Composite Conference (ACC), 2013
  NSF Workshop on Emerging Technologies for Sustainable Green Materials and Products, 2012
  UAB Engineering Open House, 2012-2010
  UAB Engineering Egg-Drop Competition, 2012
  South's BEST Regional Robotics Championship, 2003

ACADEMIC ADVASING ACTIVITIES

- Michael Cox, University of South Alabama Honors Program, Spring 2019

PROFESSIONAL ASSOCIATION ACTIVITIES

- National Science Teachers Association (NSTA), member since 2017
- SACNAS Advancing Hispanics/Chicanos & Native Americans in Science, member since 2017
- Tau Beta Pi - The Engineering Honor Society, member since 2014
- Turkish American Association of Alabama, member since 2012

CERTIFICATIONS&TRAINING

- Mentor Training Program, UAB 2016 Mentoring Week
- Activated Carbon Adsorption Principles, Practices, Opportunities (PACS Short Courses)
- Professional Teaching Certificate