

LUTFI AGARTAN

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RESEARCH INTERESTS

- Production of photocatalytic ceramic nanoparticles by Sol-Gel method, and characterization of them; effect of initial composition on viscosity of the solution and gel. Effect of viscosity on crystallinity at xerogel, morphology of powders, and photocatalytic properties.
- Water deionization systems with carbon film electrodes, electrochemistry, electrochemical system characterization, CDI systems and design.
- Materials characterization by FE-SEM, XRD, Rietveld Analysis, Rheometry, UV-Vis Spectrophotometry, Diffuse Reflector Spectroscopy.

EDUCATION

Doctor of Philosophy ***September 2014- June 2017 (Expected)***
Electrochemical Energy Systems Laboratory, and Drexel Nanomaterials
Group
Department of Mechanical Engineering and Mechanics,
Drexel University, Philadelphia, PA, USA

Thesis Subject: Water Desalination by Capacitive Deionization
Advisor: Assist. Prof. Dr. E. Caglan Kumbur
Co-Advisor: Prof. Dr. Yury Gogotsi

Master of Science ***Feb 2013 – June 2014***
Photocatalytic Materials Laboratory
Department of Metallurgical and Materials Engineering,
Middle East Technical University (METU), Ankara, Turkey

High Honor Student
CGPA: 3.79/4.00

Thesis Subject: Synthesis of B and Zr Co-Doped Titania Nanopowders by Sol-Gel Technique
Advisor: Prof. Dr. Abdullah Ozturk
Co-Advisor: Assoc. Prof. Dr. Jongee Park

Bachelor of Science ***Sep 2008 – Jun 2012***
Department of Metallurgical and Materials Engineering
Middle East Technical University (METU), Ankara, Turkey

Ranking: 14/75 (2.79/4.00)
Senior CGPA: 3.79/4.00

Senior Design Project: Transparent armor application for civilian ground vehicle

Advisors: Prof. Abdullah Öztürk, Prof. Cevdet Kaynak, Assoc. Prof. Arcan Fehmi Dericioğlu

Highlights:

- (a) Optimization of optical and ballistic properties, via MATLAB code.
- (b) Determination of the materials to be used and process to be applied, by help of weight and cost analysis

PUBLICATION/ABSTRACTS (* Presenter)

- **Agartan, L.**, Kapusuz, D., Park, J., Ozturk, A., 2014, “Effect of Initial Water Content and Calcination Temperature on Photocatalytic Properties of TiO₂ Nanopowders Synthesized by the Sol-Gel Process” *Ceramics International* [Submitted]
- Bilgin, N., **Agartan, L.**, Park, J., Ozturk, A., 2014, “Synthesis of TiO₂ Nano-Structures via Hydrothermal Method”: “Healthcare & Electronics II”, Nanotechnology for Energy, Environment, Electronics, and Industry Symposium of MS&T’14, Pittsburg, PA, USA 12-16 October 2014 (Oral Presentation)
- **Agartan, L.**, Kapusuz, D., Park, J., Ozturk, A., “*Photocatalytic Properties of TiO₂ Powders Synthesised by Sol-Gel process using different Water/Ti-Precursor Ratio*” IMMC 2014, TÜYAP, Istanbul, TURKEY 11-13 September (2014) (Poster Presentation)
- **Agartan, L.**, Kapusuz, D., Park, J., Ozturk, A., 2013, “Effect of H₂O/TEOT Ratio on Photocatalytic Activity of Sol-Gel Derived TiO₂” *Nanomaterials and Energy*, 2, 280-287 , 2013, doi:10.1680/nme.13.00026
- **Agartan, L.***, Kapusuz, D., Park, J., Ozturk, A., “*Effect of Water/Tetraethylorthotitanate Ratio on the morphology of Sol-Gel Derived TiO₂ Powder and its photocatalytic activity*”; “*Fabrication and Fundamentals II & Characterization and Properties*” 2014 Functional Nanomaterials: Synthesis, Properties and Application Symposium of TMS 2014, San Diego, California, USA 16-20 February (2014) (Oral Presentation)

PEER REVIEWED CONFERENCE PROCEEDINGS

- **Agartan, L.***, Kapusuz, D., Park, J., Ozturk, A., “*Photocatalytic Properties of TiO₂ Powders Synthesised by Sol-Gel process using different Water/Ti-Precursor Ratio*” 17th International Metallurgy & Materials Congress

LANGUAGE

- Turkish : Native
- English : Fluent [TOEFL (Dec 06, 2013) 103/120, Reading: 27/30, Listening: 28/30, Speaking: 23/30, Writing: 25/30]

GRE RESULT

Quantitative Reasoning: 167 (130-170)
Verbal Reasoning: 143 (130-170)
Analytical Writing: 3.0 (0.0-6.0)

PROFESSIONAL EXPERIENCE

- 2015, Jan 19 -** **Laboratory Manager**
Electrochemical Energy Systems Laboratory Manager
- 2014 - 2017** **TA/RA**
TA for MEM 311 Thermal and Fluid Sciences Lab. (Fall 2014)
TA for ENGR 210 Thermodynamic Analysis I (Winter 2014)
- 2013, June 16 - 17** **Attendee**
Hands-On-Training for XRF by JSPS (Japanese Society of Promotion of Science) at 2nd International Henry Moseley's School and Workshop on X-Ray Science, ITAP (Institute of Theoretical and Applied Physics) Turunc Campus, Turunc, Marmaris, Mugla, Turkey
- 2013, June 13 - 22** **Attendee**
2nd International Henry Moseley's School and Workshop on X-Ray Science, by ITAP (Institute of Theoretical and Applied Physics); ITAP Turunc Campus, Turunc, Marmaris, Mugla, Turkey.
- 2013, May 28** **Attendee**
"How To Publish a Scientific Journal Article" Workshop conducted by Springer and Edanz
- 2012, Nov - 2013, April** **Project Assistant**
Arc Welding of Al 5083 Alloy, Improving The Fracture Toughness and Crack Propagation Characteristics by Friction Stir Welding, TUBITAK (Scientific and Technological Research Council of Turkey) Project Code: 112M238
Department of Metallurgical and Materials Engineering,
Middle East Technical University
- 2011, Aug 22 - Sep 23** **Summer Internship**
Roketsan A.Ş. Missile Industries, Department of Metal Shaping, Elmadag, Ankara, Turkey
- A report about glass to metal sealing is prepared.
 - Observation of the production and shaping stages
- 2010, Oct 19–2011, Feb 20** **Inspection Committee Member**
Materials Science Society of METU
- 2010, Aug 23-2010, Sep 21** **Summer Internship**
Erkunt A.Ş., Department of Quality Control, Ankara, Turkey
- Whole casting process is observed from mold shaping, till the surface modification.
 - Quality control parameters and procedure is observed.
- 2008, Oct 10-2010 Oct 19** **Active Member**

Materials Science Society of METU

2010, Jun 18-19

Member of Organization Crew

5th Materials Day

Cultural and Conventional Center METU, Ankara, Turkey

2009 Jun 22-23

4th Materials Day

Cultural and Conventional Center METU, Ankara, Turkey

2008, Oct 16-18

Attendee

14th International Metallurgical and Materials Congress TÜYAP Fair, Convention and Congress Center, İstanbul, Turkey

PROJECTS

2013, Jan – 2014, Jan

Synthesis of B and/or Zr Doped TiO₂ Nanopowders by Sol-Gel and Solvothermal Methods, BAP-METU (Scientific Research Project), Project Code: BAP-03-08-2013-001

- *Advisor: Prof. Dr. Abdullah Ozturk*
- I produced and characterized Sol-Gel synthesized powders (FE-SEM, XRD, Rheometry, UV-Vis Spectrophotometry, Diffuse Reflection Spectroscopy, Rietveld Refinement) .
- I prepared a report for the studies conducted in the first six months of the project.

2012, Nov - 2013, Apr

Arc Welding of Al 5083 Alloy, Improving The Fracture Toughness and Crack Propagation Characteristics by Friction Stir Welding, TUBITAK (Scientific and Technological Research Council of Turkey) Project Code: 112M238

- *Advisor: Prof. Dr. Cemil Hakan Gur*
- Heat treatment, and micrographic preparations of as-received Al alloys.
- Macrographic preparation of the welded parts.

2012, Sep- Present

Synthesis of B and Zr Co-Doped Titania Nanopowders by Sol-Gel Technique, *MS Thesis*

- *Advisors: Prof. Dr. Abdullah Ozturk, Assist. Prof. Jongee Park*
- I produced and characterized synthesized powders (FE-SEM, XRD, Rheometry, UV-Vis Spectrophotometry, Diffuse Reflection Spectroscopy, Rietveld Refinement).
- I prepared a preliminary presentation (literature review and some experimental result), and 2 reports (literature review).

2012, Mar – 2012, Jun

Composite Materials Project: Military Applications of Composite Materials.

- *Advisor: Prof. Dr. Cevdet Kaynak*
- Brief research of the materials being used, techniques being

applied, and main stresses and forces acting on product are done for 6 different products (Protective Vest, Personal Bulletproof Visor, Ground Vehicle Protection, Base and Side Armours in General Purposed Helicopters, Composite Fuel Tanks for Air Vehicles, Air Inlet Duct for Air Vehicle).

- A report about the literature research was prepared.

2012, Feb - 2012, Jun

Design Project: Transparent armor application for civilian ground vehicle.

- *Advisors: Prof. Abdullah Ozturk, Prof. Cevdet Kaynak, Assoc. Prof. Arcan, Fehmi Dericioglu*
- Optical and ballistic parameters are optimized.
- Cost and weight are optimized by materials to be used and processes to be applied.
- I prepared a report, 2 posters, and 3 of the 13 presentations including the final presentation at the end of semester.

2011, Nov – 2012, Jan

Failure Analysis Project. Analysis of a car chassis in terms of production, processing and coating technique used.

- *Advisor: Prof. Dr. Bilgehan Ogel*
- Sample is investigated in optical and electron microscope; for observation of phases. EDS is used for determination of the coating. The orientation of the grains enabled us to have idea about the processing technique applied.
- A report and a presentation were prepared.

2011, Mar – 2012, Jan

Materials Research Project: Production and Characterization of B and/or Zr Doped Photocatalytic Titanium Nanoparticles

- *Advisor: Prof. Dr. Abdullah Ozturk*
- Samples were synthesized by Sol-Gel, for different catalyzers (HCl, Urea).
- For characterization: XRD, FE-SEM and UV-Vis Spectrophotometry are applied.
- 4 reports (2 for literature review, 2 for experimental result presentation)

2011, Mar – 2011, May

Materials Characterization Project. Identification of powder sample by EDS, XRD, Crystal Structure and Quantitative Analysis Techniques.

- *Advisor: Assoc. Prof. Dr. Caner Durucan*
- Purpose of the project was to teach us, how to analyze given XRD diffractogram and EDS graph; for determination of the elements, phases present in it; crystal structure determination of the present phases and amount of the present phases. During phase determination Hanawalt Method was used.
- 4 reports (Chemical, Qualitative Phase, Crystal Structure, and Quantitative Phase Analysis) and a presentation was prepared.

2010, Dec – 2011, Jan

Metallography Project. Identification and heat treatment of a given sample.

- *Advisor: Assoc. Prof. Dr. Arcan Fehmi Dericioglu*
- We were asked to determine the type of the given alloy steel, apply it a heat treatment, which will increase its yield strength to 1500 MPa, meanwhile crack must not form over the sample.
- Grain structure before and after; also, at as-polished and as-etched conditions were photographed by optical microscopes.
- A report was prepared and a presentation was done about the studies made.

AWARDS

- Research/Teaching Assistantship Grant award by Drexel University
- Authentic MSc Thesis Award from Graduate School of Natural and Applied Sciences of METU, for having low match-up between MSc Thesis and related literature and publications (via Turnitin).
- METU Graduate Course Performance Award, due to having highest CGPA among the Department of Metallurgical and Materials Engineering for 2012-2013 academic year.
- Due to being in the 10% limit in my department for two terms in a row, entitled for non-refundable grant by METU.
- Awarded two times as High Honor student in undergraduate education (GPA above 3.50/4.00)

COMPUTER SKILLS

- Microsoft Office
- iWork '09
- EC-Lab
- Matlab (Beginner Level)
- C Programing (Beginner Level)
- Adobe Photoshop CC
- Origin 8
- Rigaku Qualitative Phase Analysis 4.2.
- Unitcell
- GSAS (Rietveld Refinement)
- CMPR
- CaRIne Crystallography 3.1
- Crystal Maker

REFERENCES

Available upon request