

## **Gülnur AYGÜN**

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### **EDUCATION:**

Assoc. Prof.-Physics (October 2011), ÜAK (Higher Educational Council), Condensed Matter Physics.

Ph.D.-Physics (March 2005), Middle East Technical University, Ankara, Turkey.  
Specializing in Experimental Condensed Matter Physics

M.S.-Physics (August 1997), The Ohio State University, Columbus, OH, USA.

B.S.-Engineering Physics (June 1991), Ankara University, Ankara, Turkey.

### **EXPERIENCE:**

Dec 2012- Assoc. Prof. Dr., Department of Physics, Izmir Institute of Technology, Izmir, Turkey.

May-Dec 2012 Assist. Prof. Dr., Department of Physics, Izmir Institute of Technology, Izmir, Turkey.

2009-2010 Post Doctoral Fellow starting from January 16<sup>th</sup>, 2009 till July 31<sup>st</sup>, 2010 in “Fraunhofer, IISB, Erlangen-GERMANY”.

August 2007 Visiting Scientist, Chalmers University, Sweden, for the purpose of infrastructure usage under the FP6 European Union project.

2007-2012 Instructor Dr., Department of Physics, Izmir Institute of Technology, Izmir, Turkey.

- 2005-2007 Research Assistant Dr., Department of Physics, Izmir Institute of Technology, Izmir, Turkey.
- 2005-2005 Research Assistant Dr., Department of Physics, Celal Bayar University, Manisa, Turkey.
- 2002-2005 TUBITAK, Bulgarian Academy of Sciences project and mutual visits from both countries.
- 1999-2000 Research Associate, Materials Science Division, Argonne National Laboratory.
- 1998-2005 Research Assistant, Middle East Technical University, Ankara, Turkey.
- 1996 Research Assistant for spring semester in “The Ohio State University”, Columbus, OH, USA.
- 1993-1997 Research Assistant, Department of Physics, Celal Bayar University, Manisa, Turkey.
- 1991-1993 Research Assistant, Department of Engineering Physics, Ankara University, Ankara, Turkey. Duty involved conducting undergraduate physics laboratories, discussion classes and one-and-one tutoring.

**SKILLS:**

- Fabrication of MOS capacitors.
- High Frequency Capacitor–Voltage Measurements and Analysis.
- Current–Voltage Measurements and Analysis of MOS capacitors.
- Experience on various Spectroscopic Ellipsometers, FTIR, Spectrophotometers.
- Experience on X–Ray Photoelectron Spectroscopy (XPS) for the surface and depth profile studies of Silicon-oxide and metal oxides.
- UHV techniques.
- Experience in oxide film growth by sputtering technique.
- Experience on high- $\kappa$  dielectric ( $\text{SiO}_2$  and  $\text{Ta}_2\text{O}_5$ ) growth by Nd–YAG Laser oxidation.
- Familiarity with automated data acquisition systems, Labview.

- UNIX, DOS, FORTRAN, Latex, Microsoft Office Programs, gnu-plot, Kaleidagraph, Origin Pro, SpectraRay, FilmWizard.
- Interpreting XPS depth profiling data.

#### **HONORS AND AWARDS:**

- Post Doctoral Fellow in “Fraunhofer, IISB, Erlangen-GERMANY (16.01.2009 – 31.07.2010).
- Full support from NATO ASIs for the participation on Photon-based Nano-Science and Technology: from Atomic Level Manipulation to Materials Synthesis and Nano-Biodevice Manufacturing (Photon-NST'2005), Quebec, Canada 19 Sep 2005 - 29 Sep 2005.
- Full Scholarship for M.Sc. study in the USA from Higher Educational Council of Turkish Government. (1993-1997).
- 2<sup>nd</sup> rank in graduation from Engineering Physics Department of Ankara University, June 1991.
- 2<sup>nd</sup> rank in the English Preparation School of Ankara University in 1991-1992 .

#### **ACTIVITIES:**

##### **Reviewed papers for the following journals:**

- 1 paper was reviewed for **Nanotechnology**
- 2 papers were reviewed for **Türk Fizik Dergisi**
- 2 papers were reviewed for **Journal of Materials Science and Engineering**
- 2 papers were reviewed for **Applied Physics Letters**
- 1 paper was reviewed for **Vacuum**
- 3 papers were reviewed for **Journal of Non-Crystalline Solids.**
- 3 papers were reviewed for **Thin Solid Films.**
- 1 paper was reviewed for **Nanoscience and Nanotechnology Letters.**
- 4 papers were reviewed for **Applied Surface Science.**
- 2 papers were reviewed for **Applied Physics Letters.**
- 1 paper was reviewed for **Semiconductor Science and Technology.**
- 1 paper was reviewed for **Surface Coating Technology.**
- 3 papers were reviewed for **Journal of Applied Physics.**

**Reviewed many projects for TÜBİTAK and DPT.**

**Advised Thesis:**

“Growth and characterization of ITO / Metal / ITO thin films for transparent and conductive electrodes” Zemzem Uyanik was started on October 2017.

“ ... ” Merve Ekmekcioglu was started on November 2017.

“Direct writing of nanometer size devices on thin films by maskless lithography” Aileen Noori was started on Feb 2017.

“Growth of in-situ  $\text{Cu}_2\text{ZnSnS}_4$  thin films by magnetron sputtering for solar cells” M.Sc. thesis by Dilara Gokcen BULDU was completed on July 2017.

“Temperature Dependence of Resistivity and Hall Coefficient in  $\text{Cu}_2\text{ZnSnS}_4$  Absorbers for Thin Film Solar Cells” M.Sc. thesis by Gulsah AKCA was completed on July 2017.

“Properties of Thin Film  $\text{Li}_x\text{La}_y\text{TiO}_3$  Electrolyte For All Solid State Li-ion Batteries” M.Sc. thesis by Sena GÜLEN was completed on April 2016.

“Growth of CdS thin films on  $\text{Cu}_2\text{ZnSnS}_4$  Kesterites for Thin Film Solar Cells” M.Sc. thesis by Şebnem YAZICI was completed on July 2014.

“Fabrication and characterization of superconducting Bi2212 bolometer for the detection of THz waves” M.Sc. thesis by Metin KURT was completed on July 2014.

“CO Gas Sensor applications of Fe doped Calix[4]arene Molecules” M.Sc. thesis by Cebraıl OZBEK was completed on August 2013.

“Fabrication of Nanosize Detector Chip and Its Electrical Characteristics” Ph.D. thesis by Hakan ALABOZ was started on March 2013.

“Production and Characterization of  $\text{HfO}_2$  high-k layers by Sputtering Technique” M.Sc. thesis by Ayten CANTAS was completed on June 30th, 2010.

**Conducted Courses at IZTECH Physics Department:**

Course Code	Credit	Course Name
PHYS 121 and PHYS 121 Lab	(3+2)=4	General Physics I
PHYS 122 and PHYS 122 Lab	(3+2)=4	General Physics II
PHYS 101 and PHYS 111 Lab	(3+2)=4	General Physics I
PHYS 102 and PHYS 112 Lab	(3+2)=4	General Physics II
PHYS 380	(3+0)=3	Thermal Physics
PHYS 222	(4+0)=4	Modern Physics
PHYS 522	(3+0)=3	Advanced Experimental Methods
PHYS 212	(0+4)=2	Waves and Optics Laboratory
MSE 513	(3+0)=3	Materials Microstructure
PHYS 241	(1+2)=2	Introductory Electronic Circuits
PHYS 513	(3+0)=3	Physics of Semiconductors

## Professional Activities

### Published Articles:

1. "Investigation of Electron Beam Lithography on Metal-Insulator Transition Behavior of Vanadium Dioxide" H. Yuce, H. Alaboz, Y. Demirhan, M. Ozdemir, L. Ozyuzer, **G. Aygun**, submitted to Journal of Electronic Materials, JEMS-D-16-00808.
2. "Comparison of Photocatalytic Properties of TiO<sub>2</sub> Thin Films and Fibers" M. Ozdemir, M. Kurt, L. Ozyuzer, **G. Aygun**, European Physical Journal Applied Physics (EPJ AP), in press, doi: 10.1051/epcap/2016160247.
3. "Influence of copper composition and reaction temperature on the properties of CZTSe thin films" M Ali Olgar, Y. Atasoy, M. Tomakin, **G.Aygun**, L. Ozyuzer, E. Bacaksiz, Journal of Alloys and Compounds **682**, 610-617 (2016).

4. "Improvement of optical and electrical properties of ITO thin films by electro-annealing" Hasan Koseoglu, Fulya Turkoglu, Metin Kurt, Mutlu D. Yaman, Fatime G. Akca, **Gulnur Aygun**, Lutfi Ozyuzer, *Vacuum* **120**, 8-13 (2015).
5. "Growth of  $\text{Cu}_2\text{ZnSnS}_4$  absorber layer on flexible metallic substrates for thin film solar cell applications" S. Yazici, M.A. Olgar, F.G. Akca, A. Cantas, M. Kurt, **G. Aygun**, E. Tarhan, E. Yanmaz, L. Ozyuzer, *Thin Solid Films* **589**, 563-573 (2015).
6. "In-situ Spectroscopic Ellipsometry and Structural Study of  $\text{HfO}_2$  Thin Films Deposited by RF Magnetron Sputtering" Ayten Cantas, **Gulnur Aygun**, Deepak Kumar Basa, *Journal of Applied Physics* **116**, 083517 (2014).
7. "Impact of incorporated Oxygen quantity on Optical, Structural and Dielectric Properties of reactive magnetron sputter grown  $\text{HfO}_2/\text{Hf}/\text{Si}$  high-k thin film" by A. Cantas, **G. Aygun**, and R. Turan, *Applied Surface Science* **318**, 199-205 (2014).
8. "Simulation of 3D inclined/rotated UV lithography and its application to microneedles" Shijie Liu, Georg Roeder, **Gulnur Aygun**, Kristian Motzek, Peter Evanschitzky, Andreas Erdmann, *Optik* **123**, 928-931 (2012).
9. "Effects of physical growth conditions on the structural and optical properties of sputtered grown thin  $\text{HfO}_2$  films" **Gulnur AYGUN**, Ayten CANTAS, Yilmaz SIMSEK, Rasit TURAN, *Thin Solid Films* **519**, 5820-5825 (2011).
10. "Determination of the Dill parameters of thick positive resist for use in modeling applications" G. Roeder, S. Liu, **G. Aygun**, P. Evanschitzky, A. Erdmann, M. Schellenberger, L. Pfitzner, *Thin Solid Films* **519**, 2978-2984 (2011).
11. "Ge nanocrystals embedded in  $\text{SiO}_2$  in MOS based radiation sensors", Aliekber Aktag, Ercan Yilmaz, Nader A.P. Mogaddam, **Gulnur Aygun**, Ayten Cantas, Rasit Turan, *Nuclear Instruments and Methods in Physics Research B* **268**, 3417-3420 (2010).
12. "Impact of Temperature Increments on Tunneling Barrier Height and Effective Electron Mass for plasma nitrided thin  $\text{SiO}_2$  layer on a large wafer area", **G. Aygun**, T. Erlbacher, G. Roeder, M. Wolf, M. Schellenberger, L. Pfitzner, *Journal of Applied Physics* **108**, 073304 (2010).

13. "High quality ITO thin films grown by DC and RF sputtering without oxygen" O. Tuna, Y. Selamat, **G. Aygun**, L. Ozyuzer, Journal of Physics D: Applied Physics **43**, 055402 (2010).
14. "Evolution of SiO<sub>2</sub>/Ge/HfO<sub>2</sub>(Ge) Multilayer Structure During High Temperature Annealing" D. Sahin, I. Yildiz, A. I. Gencer, **G. Aygun**, R. Turan, Thin Solid Films **518**, 2365–2369 (2010).
15. "Interfacial and Structural Properties of sputtered HfO<sub>2</sub> layers", **G. Aygun**, I. Yildiz, Journal of Applied Physics **106**, 014312 (2009).
16. "Local oxidation nanolithography on Hf thin films using atomic force microscopy (AFM)", S. Buyukkose, S. Okur, **G. Aygun**, Journal of Physics D: Applied Physics **42**, 105302 (2009).
17. "Effect of substrate temperature on structural, electrical and optical properties of indium tin oxide grown by dc magnetron sputtering" O. Tuna, Y. Selamat, **G. Aygun**, F. Turkoglu, L. Ozyuzer, Journal of Optoelectronics and Advanced Materials-Symposia **1**, 404 (2009).
18. "Electrical and dielectrical properties of tantalum oxide films grown by Nd:YAG laser assisted oxidation", **G. Aygun**, R. Turan, Thin Solid Films **517**, 994 (2008).
19. "XPS study of pulsed Nd:YAG laser oxidized Si" **G. Aygun**, E. Atanassova, K. Kostov, R. Turan, Journal of Non-Crystalline Solids **352**, 3134 (2006).
20. "Structural and optical characteristics of tantalum oxide grown by pulsed Nd:YAG laser oxidation" E. Atanassova, **G. Aygun**, R. Turan, Tz. Babeva, Journal of Vacuum Science and Technology A **24** (2), 206 (2006).
21. "Spatial distribution of light – emitting centers in Si – implanted SiO<sub>2</sub>" U. Serincan, **G. Aygun**, R. Turan, Journal of Luminescence **113**, 229 (2005).
22. "Properties of reactive O<sub>2</sub> ion beam sputtered TiO<sub>2</sub> on Si wafers" S. Ulucan, **G. Aygun**, L. Ozyuzer, M. Egilmez, R. Turan, Journal of Optoelectronics and Advanced Materials **7**, 297 (2005).
23. "Reflectance spectra and refractive index of Nd:YAG laser oxidized Si surface" **G. Aygun**, E. Atanassova, R. Turan, Tz. Babeva, Materials Chemistry and Physics **89**, 316 (2005).

24. "Oxidation of Si Surface by a Pulsed Nd-YAG Laser" **G. Aygun**, E. Atanassova, A. Alacakir, L. Ozyuzer, R. Turan, Journal of Physics D: Applied Physics **37**, 1569 (2004).

#### **Other Manuscripts:**

1. "The Structure and Properties of Liquid Metals from Molecular Dynamics", G. Dereli, **G. Aygün Özyüzer** and Tahir Çağın, preprint (2000).

#### **International conferences / meetings attended:**

1. "The Structure and The Properties of Liquid Metals from Molecular Dynamics", **G. Aygün Özyüzer**, G. Dereli, and Tahir Çağın, has been presented at the 2000 March Meeting of the American Physical Society (March 20-26, 2000) in Minneapolis, MN, USA, (Oral presentation).
2. "Properties of reactive O<sub>2</sub> ion beam sputtered TiO<sub>2</sub> on Si wafers" S. Ulucan, **G. Aygun**, L. Ozyuzer, M. Egilmez, R. Turan, 13<sup>th</sup> International School on Condensed Matter Physics: Varna, Bulgaria August 29-September 4, 2004.
3. "Structural, optical and electrical characteristics of tantalum oxide grown by pulsed Nd:YAG laser oxidation" **G. Aygun**, R. Turan, E. Atanassova, Tz. Babeva, NATO ASIs on Photon-based Nano-Science and Technology: from Atomic Level Manipulation to Materials Synthesis and Nano-Biodevice Manufacturing (Photon-NST'2005), Quebec, Canada, 19 Sep 2005 – 29 Sep 2005 (Oral presentation).
4. "Structural, optical and electrical characteristics of tantalum oxide grown by pulsed Nd:YAG laser oxidation" **G. Aygun**, R. Turan, E. Atanassova, Tz. Babeva, NATO ASIs on Photon-based Nano-Science and Technology: from Atomic Level Manipulation to Materials Synthesis and Nano-Biodevice Manufacturing (Photon-NST'2005), Quebec, Canada 19 Sep 2005 - 29 Sep 2005 (Poster presentation).



5. "Effects of physical growth conditions on the structural properties of sputtered grown thin HfO<sub>2</sub> films" **G. Aygun** and A. Cantas, E-MRS 2010 Spring Meeting, Symposium E: Frontiers of multifunctional oxides, Congress Center in Strasbourg (France), June 7-11, 2010.
6. "Depth profile of thin HfO<sub>2</sub> layers with an in-situ Spectroscopic Ellipsometer" A. Cantas and **G. Aygun**, E-MRS 2010 Spring Meeting, Symposium E: Frontiers of multifunctional oxides, Congress Center in Strasbourg (France), June 7-11, 2010.
7. "Interface Analysis of HfO<sub>2</sub> films on Si X-Ray Photoelectron Spectroscopy" A. Cantas and **G. Aygun**, TUCr 2012, Dokuz Eylül Üniversitesi, Tınaztepe Yerleşkesi, İzmir, 7-9 Haziran 2012.
8. "XRD and XPS Studies of Large Area Grown ITO" Sebnem Yazici, Ayten Cantas, Mutlu D. Yaman, Hasan Koseoglu, Hilal Saglam, **Gulnur Aygun**, Lutfi Ozyuzer, TUCr 2012, Dokuz Eylül Üniversitesi, Tınaztepe Yerleşkesi, İzmir, 7-9 Haziran 2012.
9. "Electrical and Optical Properties of Large Area Grown ITO" Sebnem Yazici, Ayten Cantas, Mutlu D. Yaman, Hasan Koseoglu, Hilal Saglam, **Gulnur Aygun**, Lutfi Ozyuzer, PLASMA 2012, Radisson Blue Hotel Çeşme, İzmir, 10-13 Haziran 2012.
10. "Fabrication and Characterization of CZTS Absorber Layer on Titanium Coated Ceramic for Solar Cells" M.A. Olgar, H. Saglam, S. Yazici, A. Cantas, **G. Aygun**, E. Yanmaz, L. Ozyuzer, PLASMA 2012, Radisson Blue Hotel Çeşme, İzmir, 10-13 Haziran 2012.
11. "X-Ray Photoelectron Spectroscopic Analysis of HfO<sub>2</sub>/Hf/Si Multilayer Structure Prepared by Radio Frequency Magnetron Sputtering" Ayten Cantas, **Gulnur Aygun**, PLASMA 2012, Radisson Blue Hotel Çeşme, İzmir, 10-13 Haziran 2012.
12. "Temperature Dependence of Ionic Conductivity in PVB/LiClO<sub>4</sub>" Halil Arslan, H. Saglam, M.D. Yaman, H. Koseoglu, H. Alaboz, **G. Aygun**, L. Ozyuzer, PLASMA 2012, Radisson Blue Hotel Çeşme, İzmir, 10-13 Haziran 2012.
13. "Depth Profile Analysis of HfO<sub>2</sub>/Hf/Si Multilayer Structure Using X-Ray Photoelectron Spectroscopy" Ayten Cantas, **Gulnur Aygun**, NanoTR8, Hacettepe Üniversitesi, Sıhhiye Kampüsü, Ankara, 25-29 Haziran 2012.

14. “XRD and XPS Studies of Large Area Grown ITO for Solar Cells” Sebnem Yazici, Ayten Cantas, Mutlu Devran Yaman, Hasan Koseoglu, Hilal Saglam, **Gulnur Aygun**, Lutfi Ozyuzer, NanoTR8, Hacettepe Üniversitesi, Sıhhiye Kampüsü, Ankara, 25-29 Haziran 2012.
15. “In-situ Spectroscopic Ellipsometry and Structural Study of HfO<sub>2</sub> Thin Films Deposited by RF Magnetron Sputtering” **Gulnur Aygun**, Ayten Cantas, Deepak Kumar Basa, SATF2014, Cesme, Izmir, Turkey, 15-19 Sept 2014.
16. “Photocatalytic properties of TiO<sub>2</sub> Thin Films and Fibers” Mehtap Ozdemir Koklu, Metin Kurt, Gulnur Aygun, Lutfi Ozyuzer, SATF2014, Cesme, Izmir, Turkey, 15-19 Sept 2014.
17. “Preperation and Characterization of Cu<sub>2</sub>ZnSnS<sub>4</sub> Absorber Layer on Metallic Flexible Substrates” Sebnem Yazici, M. Ali Olgar, F. Gulsah Akca, Metin Kurt, **Gulnur Aygun**, Ekrem Yanmaz and Lutfi Ozyuzer, SATF2014, Cesme, Izmir, Turkey, 15-19 Sept 2014.
18. “New transfer method of exfoliated thin Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8+x</sub> single crystals on saphire for hot electron bolometer” Hakan Alaboz, Yasemin Demirhan, Tugce Semerci, Metin Kurt, **Gulnur Aygun**, Devrim Pesen, Nobuaki Miyakawa, Lutfi Ozyuzer, SATF2014, Cesme, Izmir, Turkey, 15-19 Sept 2014.
19. “Structural and Electrical Characterizations of p-type Cu<sub>2</sub>ZnSnS<sub>4</sub> Absorber Layer Material for Solar Cells” Fatime Gulsah Akca, Sebnem Yazici, Mehmet Ali Olgar, Fulya Turkoglu, **Gulnur Aygun**, Ekrem Yanmaz, Lutfi Ozyuzer, SolarTR-3, METU, Ankara, Turkey, 27-29 Nisan 2015.
20. “Characterization of VO<sub>2</sub> Films Grown by Magnetron Sputtering for Thermochromic Applications” Hurriyet Yuce, Hakan Alaboz, Mehtap Koklu, **Gulnur Aygun**, Lutfi Ozyuzer, SolarTR-3, METU, Ankara, Turkey, 27-29 Nisan 2015.
21. “VO<sub>2</sub> films grown by magnetron sputtering” **Gulnur Aygun**, Hurriyet Yuce, Lutfi Ozyuzer, Mehtap Ozdemir, E-MRS 2015 Fall Meeting, Central Campus of Warsaw University of Technology, Poland, September 14 – 18, 2015.
22. “Dependence of Ionic Conductivity of Li<sub>0.5-x</sub>La<sub>0.5</sub>Ti<sub>1-x</sub>O<sub>3</sub> Electrolyte on Ion Substitution” Mehtap Koklu Ozdemir, Sena Gulen, Seda Ulusoy, **Gulnur Aygun**,

Lutfi Ozyuzer, E-MRS 2015 Fall Meeting, Central Campus of Warsaw University of Technology, Poland, September 14 – 18, 2015.

23. “Magneton Sputtered VO<sub>2</sub> films for Field Effect Transistors via Metal Insulator Transition” **Gulnur Aygun**, Hurriyet Yuce, Yasemin Demirhan, Hakan Alaboz, POLAND QM 2016 Mehtap Ozdemir, Lutfi Ozyuzer, QM2016-5th International Conference on Quantum Metrology, Poznan, POLAND, May 11-13, 2016.

**National conferences/meetings attended:**

1. **22. Turkish Physical Society Conference**, Bodrum – Turkey, 14–17 September, 2004, (Oral presentation: Electrical and Optical Properties of Nd:YAG Laser Grown Si Oxides.)
2. **XI. Condensed Matter Physics Meeting** in Ankara, Ankara – Turkey, December 3<sup>th</sup>, 2004, (Oral presentation: Structural, Chemical, Electrical and Optical properties of Si oxides grown by pulsed Nd:YAG Laser)
3. **XII. Condensed Matter Physics Meeting** in Ankara, Ankara – Turkey, Nov 18<sup>th</sup> 2005, (Oral presentation: Structural and optical characteristics of tantalum oxide grown by pulsed Nd:YAG laser oxidation).
4. **NANO-TRII, Nanoscience and Nanotechnology Meeting**, 3-5 May, 2006, METU, Ankara-Turkey.
5. **XIII. Condensed Matter Physics Meeting** in Ankara, ODTU – Turkey, Nov 3<sup>rd</sup> 2006, (Poster presentation: Thickness distribution, structural, electrical and dielectrical properties of Nd:YAG laser grown tantalum oxide films).
6. **NanoTR-III: Nanoscience and Nanotechnology Conference**- June 11-14, 2007, Bilkent University, Ankara-Turkey, (Oral presentation: Anodic Oxidation of Ta and Hf thin films on Si using SPM Lithography Technique).
7. **24. Turkish Physical Society Conference**, Inonu University, Malatya – Turkey, 28–31 August, 2007, (Oral presentation: Interfacial and Structural Properties of sputtered HfO<sub>2</sub> layers).

8. *XIV. Condensed Matter Physics Meeting-* Nov 3<sup>rd</sup> 2007, Ankara, Hacettepe, Turkey, (Oral presentation: Interfacial and Structural Properties of sputtered HfO<sub>2</sub> layers).
9. *NanoTR-IV: The 4<sup>th</sup> Nanoscience and Nanotechnology Conference-* 9-13 June 2008, İstanbul Teknik University, ISTANBUL – TURKEY (Oral Presentation: “Preparation of ZrO<sub>x</sub> Nanostructures using Scanning Probe Lithography (SPL)” by Serkan Buyukkose, Salih Okur and Gulnur Aygun, Abstract Book Page: 56)
10. *TFD-25: 25<sup>th</sup> Turkish Physical Society Conference-* 25-29 August 2008, Bodrum-TURKEY. (Oral Presentation: “Anodic oxidation nanolithography on Ta, Hf and Zr thin films using scanning probe microscope (SPM)” by Serkan Buyukkose, Salih Okur, S. Tari and Gulnur Aygun, Abstract Book Page: 94).
11. *NanoTR-V: The 5<sup>th</sup> Nanoscience and Nanotechnology Conference-* 8-12 June 2009, Eskişehir-Turkey (Oral Presentation: “In-situ Spectroscopic Ellipsometer Characterization of Thin HfO<sub>2</sub> Layers Grown by Reactive Magnetron Sputtering Technique” by A. Cantas and G. Aygun).
12. *NANOMATS 2009: International Conference on Nanomaterials and Nanosystems-* 10-13 Ağustos 2009, ITU Ayazaga Campus, Istanbul, TURKEY (Poster Presentation: “In-situ spectroscopic ellipsometer characterization of thin HfO<sub>2</sub> layers grown by reactive magnetron sputtering technique” Ayten Cantas, Gülnur Aygün).
13. *NANOMATS 2009: International Conference on Nanomaterials and Nanosystems-* 10-13 Ağustos 2009, ITU Ayazaga Campus, Istanbul, TURKEY (Poster Presentation: “Growth and Characterization of ITO Thin Films on Very Large Areas” O. Tuna, Y. Selamet, G. Aygun, L. Ozyuzer).
14. *ECASIA '09: 13<sup>th</sup> European Conference on Applications of Surface and Interface Analysis-* 18-23 October 2009, Antalya, TUKEY (Poster Presentation: “The Characterization of Thin HfO<sub>2</sub> layers by in-situ Spectroscopic Ellipsometry” by A. Cantas and G. Aygun).
15. *NanoTR6: The 6<sup>th</sup> Nanoscience and Nanotechnology Conference-* 15-18 June 2010, IZTECH Physics Department, Urla, Izmir, TURKEY (“**Interfacial and Structural Properties of sputtered HfO<sub>2</sub> layers**” by G. Aygun and A. Cantas).
16. *NanoTR6: The 6<sup>th</sup> Nanoscience and Nanotechnology Conference-* 15-18 June 2010, IZTECH Physics Department, Urla, Izmir, TURKEY (“**Depth profile study**

of thin HfO<sub>2</sub> layers by an In-situ Spectroscopic Ellipsometry” by A. Cantas and G. Aygun).

**PROJECTS:**

**European Union Project (International):**

<b>Project Number</b>	<b>The role in the project</b>	<b>Project name</b>	<b>Domestic/ International</b>	<b>Starting/ Ending Date</b>
MC2ACCESS-026029	Researcher	“Use of HfO <sub>2</sub> as tunneling layer in the nanocrystal based flash memory cells (NANOFLASH)”	<b>International (EU project for FP6)</b> Infrastructure usage of Chalmers University MC2ACCESS facility of Sweden under the FP6 project	May 2007/ May 2008
SEA-NET-027982	Researcher	“Semiconductor Equipment Assessment for NanoElectronic Technologies”	<b>International (EU project for FP6: FP6-2004-IST-4 contributor from FRAUNHOFER Inst., IISB, Erlangen, GERMANY)</b>	2004-2009
IMPROVE	Researcher	“ <i>Implementing Manufacturing science solutions to increase equipment pROductivity and fab pERformance</i> ”	<b>International (EU project-Germany)</b> ENIAC-2008-1 No:120005 (11 879 659 Euro)	2007-2010
ThickResist	Researcher	ThickResist	<b>Germany Fraunhofer Institute, Erlangen</b>	2008-2010

**SAN-TEZ Project (National):**

<b>Project Number</b>	<b>The role in the project</b>	<b>Project name</b>	<b>Domestic/ International</b>	<b>Starting/ Ending Date</b>
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SAN-TEZ1386. STZ.2012-1	Researcher	“Terahertz Wave sensitive fast Bolometric Dedector”	National project	Octo 2012/ Sept 2014
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**International Projects supported by Turkish Scientific and Research Council (TUBITAK):**

Project Number	The role in the project	Project name	Domestic/ International	Starting/ Ending Date
TBAG–U68	Researcher	“Production and characterization of Ta <sub>2</sub> O <sub>5</sub> by laser assisted oxidation”	International project conducted with Bulgarian Academy of Sciences	June 2003/ December 2005
113F349 COST	Project Director	“Metal-Yalıtkan Geçiş Özellikli VO <sub>2</sub> ile Gate Oksitli Ve Gate Oksitsiz Alan-Etkili Aygıt”	National project involved in a COST project named as HERALD	May 2014/ May 2017

**National Projects supported by Turkish Scientific and Research Council (TUBITAK):**

Project Number	The role in the project	Project name	Domestic/ International	Starting/ Ending Date
TBAG-112T068	Project Director	“Cu <sub>2</sub> ZnSnS <sub>4</sub> Semiconductor on Titanium Fabricated by Magnetron Sputtering for Thin Film Solar Cells”	National project	1 June 2012/ 1 June 2013
TBAG–107T117	Project Director	“The production and characterization of thin high-k dielectric layers by sputtering technique”	National project	July 2007/ July 2010
213M282	Consultant	“Producing continuous electrochromic fiber by magnetic sputtering and chemical oxidative polymerization method”	National project	1 Apr 2014/ 1 Apr 2016
114F341	Project Director	“Cu <sub>2</sub> ZnSnS <sub>4</sub> Thin Film Solar Cells on Flexible Titanium Foil Substrates”	National project	June 2015/ June 2018

114M044	Researcher	Ionic conductivity of Al Doped $\text{Li}_{0.5-x}\text{La}_{0.5}\text{Ti}_{1-x}\text{O}_3$ electrolyte	National project	May 2014/ May 2016
215E113	Researcher	Terahertz uygulamaları için sıcaklığı yükseltilmiş kuantum kademeli lazerler	National project	1 May 2016/ 1 May 2019
DPT project2009	Researcher	“Uygulamalı Kuantum Araştırmaları Merkezi”	National project	2009-2010

### Projects supported by University’s Fundings:

Project Number	The role in the project	Project name	Project type	Starting/ Ending Date
2015 İYTE 36	Project Director	$\text{VO}_2$ Films Grown on Quartz Glass By Magnetron Sputtering Technique for Thermochromic Applications	University	5 June 2015/ 5 June 2016
2014 İYTE 21	Project Director	Fabrication from a compound target of p-type $\text{Cu}_2\text{ZnSnS}_4$ for Thin Film Solar Cell Modules	University	21 Mar 2014/ 20 Mar 2015
2012 İYTE 22	Project Director	$\text{Cu}_2\text{ZnSnS}_4$ Semiconductor on Molibdenium Foil fabricated by Magnetron Sputtering for Thin Film Solar Cells	University	7 Sept 2012/ 6 Sept 2012
2008 İYTE 37 (Izmir Institute of Technology)	Project Director	rf sputtering of $\text{HfO}_2$ high-k thin dielectric films and optical characterization during growth by in-situ spectroscopic ellipsometer	University	01 January 2008/ 31 Dec 2009
2006 İYTE 21 (Izmir Institute of Technology)	Project Director	Production by rf sputtering and characterization of $\text{Ta}_2\text{O}_5$ and $\text{HfO}_2$ high-k thin dielectric films	University	01 July 2006/ 31 June 2008
ODTÜ BAP-2002-01-05-03 (Middle East Technical University)	Researcher	Laser oxidation of semiconductor surfaces	University	01 June 2002/ 01 June 2003
ODTÜ BAP-2002-07-02-00-	Researcher	Laser oxidation of semiconductor and metal		

24 (METU)		surfaces	University	01 June 2002/ 01 June 2004
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