

Gülgün Hamide Aydoğdu Kuru

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EDUCATION

Harvard University, Cambridge, MA, USA

Post. Doc. in School of Engineering and Applied Science

2010 – 2011 (**Harvard University Research Fellowship**)

- *Project: Multidisciplinary research initiative (MURI-Emergent Phenomena at Mott Interfaces) supported by Army Research Office*
Supervisor: Prof. Dr. Shriram Ramanathan

University of Stuttgart, Stuttgart, GERMANY

Ph.D. in Chemistry

2005 – 2009 (**Max Planck Institute Scholarship**)

- *Ph. D. topic: Tuning transport, magnetic and structural properties of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ films by epitaxial strain*
- *Project: Controlling mesoscopic phase separation (CoMePhS) funded by European Commission*
Supervisor: Prof. Dr. Hanns-Ulrich Habermeier

Middle East Technical University, Ankara, TURKEY

M.Sc. in Metallurgical and Materials Engineering

2002 – 2004

- *M. Sc. topic: Determination of susceptibility to intergranular corrosion in AISI 304L and 316L type stainless steels by electrochemical reactivation method*
- *Project: The unit of scientific research projects-BAP- of METU*
Supervisor: Prof. Dr. M. Kadri Aydınol

Middle East Technical University, Ankara, TURKEY

B.Sc. in Metallurgical and Materials Engineering

1996 – 2001

EXPERIENCES/INTERESTED AREAS

- Optical thin films; design and fabrication and characterization of optical properties
- Novel solid-state energy materials and semiconductors
- Microelectronic device fabrications
- Metal-insulator transition in oxides
- High temperature ionic and electronic transport in thin film oxide-ion conductors
- Corrosion of metals and alloys

CARRIER HISTORY

ASELSAN Inc., Microelectronics, Guidance and Electro-Optics Division, Ankara, Turkey

2011-present (as Design Leader)

- Increasing laser induced damage threshold of optical films
- Improving the resistance of optical films to environmental conditions
- Mirror, Broad and narrow bandpass filters
- Image intensifier systems

Harvard University, School of Engineering and Applied Science, Cambridge, MA, USA
2010-2011 (as Researcher)

- Synthesis of oxide thin films (NiO and SmNiO₃) and understanding the relation between defect chemistry and transport properties of these materials.
- To explore the role of point defects in phase transitions at oxide interfaces; and their active control by (UV) photo-excitation and heat treated in ozone environment

Max Planck Institute for Solid State Research, Stuttgart, Germany
2005-2009 (as Researcher)

- Structural characterization of YBa₂Cu₃O₇ and La_{0.9}Ca_{0.1}MnO₃ thin films
- X-ray illumination experiments in Elettra Synchrotron Light Source, Trieste, Italy
- Examination of the structural variations at different temperatures by Raman spectroscopy in collaboration with the group of Prof. E. Liarokapis, NTU Athens, Greece
- Investigation of spin and orbital magnetic moments of Mn in La_{0.5}Ca_{0.5}MnO₃ films by XMCD in WERA beamline of ANKA in collaboration with PD Dr. E. Goering, MPI-MF, Stuttgart, Germany
- Characterization of the surfaces of films by AR-XPS method in collaborated with the group of Dr. Ir. L. P. H. Jeurgens, MPI-MF, Stuttgart, Germany

PUBLICATIONS

“Enhancement of laser damage resistance at 1064 nm of high and anti-reflective optical multilayers by tailoring the electric field distribution and post annealing”

G. H. Aydogdu, M. B. Cosar, H. Batman, A. E. S. Ozhan, submitted

“A solution to adhesion problem of oxide thin films on Zinc Selenide optical substrates”

M. B. Cosar, G. H. Aydogdu, H. Batman, A. E. S. Ozhan, submitted to *Surface and Coatings Technology*

“Improving the laser damage resistance of oxide thin films and multilayers via tailoring ion beam sputtering parameters”

M. B. Cosar, A. E. S. Ozhan and G. H. Aydogdu, *Applied Surface Science*, 336 (2015) 34–38

“A short report about improving adhesion problem of precious metals used high reflectance optical coatings”

G. H. Aydogdu, H. Batman, A. E. S. Ozhan, *SVC - 57th Annual Technical Conference Proceedings*, May 3-8, 2014, Chicago, IL USA

“ZnSe alttaş yüzeylerinin plazma temizliği yoluyla iyileştirilmesi”

H. Batman, G. H. Aydogdu and A. E. S. Ozhan, *2. Uluslararası Yüzey İşlemleri Sempozyumu*, Haziran 25-27, 2014, İstanbul Turkey

“Yansıtımlı ince film”

Türk Patent Enstitüsü 2013-G-25704

“In-situ stress relaxation and diffraction studies across metal-insulator transition in epitaxial and polycrystalline SmNiO₃ thin films”

B. Viswanath, G. H. Aydogdu, S. D. Ha, and S. Ramanathan, *Scripta Materialia*, 66 (2012) 463

“Electrically-driven metal-insulator transition with tunable threshold voltage in VO₂-SmNiO₃ heterostructure on silica”

B. Viswanath, G. H. Aydogdu, S. D. Ha, and S. Ramanathan, *Journal of Applied Physics*, 110 (2011) 026110

“Epitaxy, strain and composition effects on metal-insulator transition characteristics of SmNiO₃ thin films”

G. H. Aydogdu, S. D. Ha, B. Viswanath and S. Ramanathan, *Journal of Applied Physics*, 109 (2011) 124110

“Insulator –metal transition characteristics of RF-sputtered SmNiO₃ thin films”

G. H. Aydogdu, S.D. Ha and S. Ramanathan, *Journal of Applied Physics*, 109 (2011) 137111

“Examination of insulator regime conduction mechanisms in epitaxial and polycrystalline SmNiO₃ thin films”

S.D. Ha, G. H. Aydogdu and S. Ramanathan, *Journal of Applied Physics*, 110 (2011) 094102

“Metal-insulator transition and electrically-driven memristive characteristics of SmNiO₃ thin films”

Sieu D. Ha, Gulgun H. Aydogdu, and Shriram Ramanathan, *Applied Physics Letter*, 98 (2011) 012105

“Strain induced phase separation on La_{0.5}Ca_{0.5}MnO₃ thin films”

A. Antonakos, E. Liarokapis, G.H. Aydogdu and H.-U. Habermeier, *Journal of Magnetism and Magnetic Materials*, 323 (2011) 620–630

“Metastable oxygen incorporation into thin film NiO by low temperature active oxidation: Influence on hole conduction”

G. H. Aydogdu, D. Ruzmetov and S. Ramanathan, *Journal of Applied Physics*, 108 (2010) 113702

“Thickness dependent microstructural changes in La_{0.5}Ca_{0.5}MnO₃ thin films deposited on (111) SrTiO₃”

G.H. Aydogdu, Y. Kuru, J. Nelayah, P.A. van Aken and H.-U. Habermeier, *Thin Solid Films*, 518 (2010) 4667-4669

“Interface-induced microstrain in La_{0.67}Ca_{0.33}MnO₃/YBa₂Cu₃O₇ superlattices”

Y. Kuru, G.H. Aydogdu, G. Cristiani and H.-U. Habermeier, *Journal of Crystal Growth*, 311 (2009) 3613-3617

“Half Ca-doped LaMnO₃ films on (001) SLAO and STO substrate studied by magnetization and transport measurements”

G.H. Aydogdu and H.-U. Habermeier, *Journal of Magnetism and Magnetic Materials*, 321 (2009) 1731-1734

“Tuning of the charge ordered state in the manganite thin films by internal or external strains”

A. Antonakos, M. Filippi, G.H. Aydogdu, W. Prellier, H.-U. Habermeier and E. Liarokapis, *Physica Status Solidi B*, 246 (2009) 635-642

“Tuning the magnetic and electronic properties of manganite thin films by epitaxial strain”

G.H. Aydogdu, Y. Kuru and H.-U. Habermeier, *Advances in Nanoscale Magnetism*, 122 (2009) 131-147

“Effect of vacuum and O₂ annealing treatments on structural and magnetic properties of La_{0.5}Ca_{0.5}MnO₃ thin films”

G.H. Aydogdu, Y. Kuru and H.-U. Habermeier, *Journal of Superconductivity and Novel Magnetism*, 22 (2009) 119-121

“Infrared reflectivity spectra of manganite thin films grown on different substrates”

A. Antonakos, D. Lampakis, E. Liarokapis, M. Filippi, W. Prellier, G.H. Aydogdu and H.-U. Habermeier, *Journal of Superconductivity and Novel Magnetism*, 22 (2009) 109-113

“Novel electronic and magnetic properties of La_{0.5}Ca_{0.5}MnO₃ films deposited on (111) SrTiO₃ substrates”

G.H. Aydogdu, Y. Kuru and H.-U. Habermeier, *Journal of Crystal Growth*, 310 (2008) 4521-4524

“Phase separation in manganite thin films”

A. Antonakos, D. Lampakis, E. Liarokapis, M. Filippi, W. Prellier, G.H. Aydogdu and H.-U. Habermeier, *Journal of Physics: Condensed Matter*, 20 (2008) 434232

“Thickness dependence of substrate-induced strain in La_{0.9}Ca_{0.1}MnO₃ thin films”

S. Uthayakumar, G.H. Aydogdu and H.-U. Habermeier, *Journal of Crystal Growth*, 310 (2008) 2480-2484

“Structural and electronic properties of LCMO films deposited on differently oriented STO substrates”

G.H. Aydogdu, Y. Kuru and H.-U. Habermeier, *Materials Science and Engineering B*, 144 (2007) 123-126

“Strain effects on La_{0.5}Ca_{0.5}MnO₃ thin films”

A. Antonakos, E. Liarokapis, G.H. Aydogdu and H.-U. Habermeier, *Materials Science and Engineering B*, 144 (2007) 83-88

“Determination of susceptibility to intergranular corrosion and electrochemical reactivation behaviour of AISI 316L type stainless steels”

G.H. Aydogdu and M.K. Aydinol, *Corrosion Science*, 48 (2006) 3565-3583

“AISI 316L tipi östenitik paslanmaz çeliklerin tanelerarası korozyona duyarlılığının elektrokimyasal polarizasyon yöntemiyle belirlenmesi”

G.H. Aydogdu and M.K. Aydinol, *Metalurji*, 140 (2005) 50-61

“Testing of susceptibility to intergranular corrosion in austenitic stainless steels”

G.H. Aydogdu and M.K. Aydinol, *Proceedings of IXth International Corrosion and Concrete Protection Conference (2004)*

CONFERENCES/WORKSHOPS

CONTRIBUTED ORAL PRESENTATIONS

- “Enhancement of laser damage resistance at 1064 nm of high and anti-reflective optical multilayers by tailoring the electric field distribution and post annealing” SVC - 59th Annual Technical Conference Proceedings, 9-13 May 2016, **Indianapolis, IN, USA**
- “A short report about improving adhesion problem of precious metals used high reflectance optical coatings” SVC - 57th Annual Technical Conference Proceedings, 3-8 May 2014, **Chicago, IL USA**
- “Point defects in oxides (NiO and CaVO₃) at interfaces” 26 August 2010, MURI (Multidisciplinary research initiative) Meeting, University of Virginia, **Charlottesville, VA, USA**
- “Tuning electrical conductivity of NiO thin films by photo-excitation” 26-28 April 2010, Rowland Annual Review, **Cambridge, MA, USA**
- “Active point defects at oxide interfaces” 17 February 2010, Semi-annual MURI (Multidisciplinary research initiative) Meeting, University of California, **Santa Barbara, CA, USA**
- “Strain induced magnetism in La_{0.5}Ca_{0.5}MnO₃ systems” 22-27 March 2009, DPG Tagung (Deutschen Physikalischen Gesellschaft), **Dresden, Germany**
- “Structural and transport properties of La_{1-x}Ca_xMnO₃ epitaxial thin films” 12-14 January 2009, Max-Planck-Institut für Festkörperforschung, Abt. Maier, Workshop, Schloss Ringberg, **Tegernsee, Germany**
- “Effect of strain and O-stoichiometry in LCMO epitaxial thin films” 30 September-4 October 2008, 2nd Workshop of CoMePhS (Controlling mesoscopic phase separation), **Nafplion, Greece**
- “A comparative study on the influence of strain effect on electronic properties of La_{0.9}Ca_{0.1}MnO₃ and La_{0.9}Sr_{0.1}MnO₃ thin films” 30 September-4 October 2008, 2nd Workshop of CoMePhS, **Nafplion, Greece**
- “IR and Raman measurements on manganite films” 30 September-4 October 2008, 2nd Workshop of CoMePhS, **Nafplion, Greece**
- “Tuning the phase separation in manganite thin films” 26 July-1 August 2008, International Conference on Quantum Phenomena in Complex Matter, **Erice, Italy**
- “Structural properties of La_{0.5}Ca_{0.5}MnO₃ epitaxial thin films” 4-6 June 2008, Max-Planck-Institut für Festkörperforschung, Abt. Maier, Workshop, Schloss Reinsburg, **Günzburg, Germany**
- “Tuning the electrical and magnetic properties of LCMO films by epitaxial strain” 9-11 April 2008, 6th Meeting of CoMePhS, **Rome, Italy**
- “Raman studies in manganite thin films” 9-11 April 2008, 6th Meeting of CoMePhS, **Rome, Italy**
- “Studies on CMR manganates : Some experimental observation on low doped La_{0.9}Ca_{0.1}MnO₃ films” 9-11 April 2008, 6th Meeting of CoMePhS, **Rome, Italy**
- “Effect of Different Substrates on Structural and Magnetic Properties of La_{0.5}Ca_{0.5}MnO₃ Epitaxial Films” 13-14 September 2007, 5th Meeting of CoMePhS, **Groningen, Netherlands**
- “Raman studies of CMR thin films” 13-14 September 2007, 5th Meeting of CoMePhS, **Groningen, Netherlands**
- “Characterization of LCMO films deposited on (100) and (111) oriented STO substrates” 25-29 June 2007, ICNM (International Conference on Nanoscale Magnetism), **Istanbul, Turkey**
- “Structural and electronic properties of LCMO films deposited on differently oriented STO substrates” 28 May - 1 June 2007, EMRS Conference (European Materials Research Society), **Strasbourg, France**
- “Low temperature Raman study of La_{0.5}Ca_{0.5}MnO₃ thin films” 28 May -1 June 2007, EMRS Conference, **Strasbourg, France**
- “LCMO films deposited on (100) and (111) STO substrates” 27-29 March 2007, DPG Tagung, **Regensburg, Germany**
- “Properties of La_{0.5}Ca_{0.5}MnO₃ thin films deposited on (100) and (111) SrTiO₃ substrates” 17-19 June 2006, 3th Meeting of CoMePhS, **Paris, France**
- “Testing of Susceptibility to Intergranular Corrosion in Austenitic Stainless Steels” 22-25 September 2004, IXth ICCP Conference (International Corrosion and Concrete Protection), **Ankara, Turkey**

CONTRIBUTED POSTER PRESENTATIONS

- “ZnSe alttaş yüzeylerinin plazma temizliği yoluyla iyileştirilmesi” 25-27 Haziran 2014, 2. Uluslararası Yüzey İşlemleri Sempozyumu, **Istanbul, Turkey**
- “Atomic scale compositional tuning of NiO thin film by low temperature active oxidation: Influence on hole conduction” 30 November – 2 December 2010, MRS Fall Meeting, **Boston, MA, USA**
- “Strain induced magnetism in $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ systems” 26-31 July 2009, International Conference on Magnetism (ICM), **Karlsruhe, Germany**
- “Thickness dependent microstructural changes in $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ thin films deposited on (111) SrTiO_3 ” 8-12 June 2009, EMRS Conference, **Strasbourg, France**
- “Half Ca-doped LaMnO_3 films on (001) SLAO and STO substrate studied by magnetization and transport measurements” 26-30 May 2008, EMRS Conference, **Strasbourg, France**
- “Comparison of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ films deposited on (100) and (111), vicinal cut and planar SrTiO_3 substrates” 29 October-4 November 2006, 1st Workshop of CoMePhS, **Crete, Greece**

INVITED TALKS

- “Tuning Transport, Magnetic and Structural Properties of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ Films by Epitaxial Strain ” 28 January 2010, Material Science Seminar, Harvard University, Gordon McKay Laboratory, **Cambridge, MA, USA**
- “Electronic phase separation and atomic scale compositional tuning of complex oxide interfaces by epitaxial strain and low temperature oxidation” 2010, Seminar,, Bogaziçi University, **Istanbul, Turkey** and Bilkent University, **Ankara, Turkey**
- “Comparison of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ films deposited on (100), (111) planar and vicinal cut SrTiO_3 substrates” 22 February 2007, Seminar, Insitute of Applied Physics Eberhard Karls University **Tübingen, Germany**
- “Properties of $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ thin films deposited on (100)and (111) SrTiO_3 substrates” 27 December 2006, Seminar, Materials Science and Engineering, Sabancı University, **Istanbul, Turkey**

COURSE/SUMMER SCHOOL

Lecture, Society of Vacuum Coaters, Indianapolis, USA	9-13 May, 2016
Introduction to Elipsometry, Thin Film Growth and Microstructure Evaluation	
Preparation an Properties of Optical Thin Film Materials	
Course by Samuel Pellicori, Aselsan, Ankara, Turkey	4-8 June, 2012
UV and High Laser Damage Threshold Coating Technologies	
Course by Ismat Shah, Aselsan, Ankara, Turkey	23-27 July, 2012
Fundamental of Physical Vapor Deposition Processes	
Summer schools, Max Planck Institute for Metal Research, Stuttgart, Germany	
Nanoscale Materials: Structure-Property-Relations	23-25 March, 2009
Magnetism in Nanostructures and Novel Materials	7-9 January, 2008
Dynamics - Moving Matter on Different Time Scales	24-26 April, 2006
Interfaces of Oxides	4-8 July, 2005

TECHNICAL SKILLS

Laboratory skills:

- Knowledge and practice on producing oxide and metal thin films by CVD, PVD (IBD, PLD, sputtering, evaporation) and sol-gel methods,
- Characterization methods (Atomic Force Microscopy, X-ray diffraction, X-ray Photoelectron Spectroscopy, SQUID (for superconducting quantum interference device) magnetometer, Scanning Electron Microscopy, Energy Dispersive X-ray Spectroscopy (EDS), Raman and Optical Microscope, Resistivity Measurements),
- Cleanroom (Center of Nanoscale System in Harvard University) and Lithography experiences for microelectronic device fabrications,

- Electrochemical Characterization Techniques for corrosion tests and mechanical Tests (Tension, Hardness, Impact)

Computer skills:

- MS Office (Word, Excel, PowerPoint) and Origin,
- Macleod, Optilayer and Optical monitor system,
- Igor, Corrview, Leptos, XRD Wizard, Casa-XPS software

Languages:

- Turkish (Native),
- English (Fluent),
- German (Elementary)

REFERENCES

M. Kadri AYDINOL, Prof. Dr.

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06531, Ankara, TURKEY
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Reference of the current employer will be provided upon request.