HALISDEMIR UFUK

Curriculum Vitae

27 May 1988, French
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EDUCATION

2010-2012 **Master's degree in Solid-state Physics and Nanostructures**
University of Strasbourg, Strasbourg, France.
Main subjects: Advanced Quantum mechanics and Statistical physics, Computer science, Magnetism and Semiconductors, Non-equilibrium Statistical physics and transport processes.

2006-2010 **Bachelor's degree in Physics**
University of Strasbourg, Strasbourg, France.
Main subjects: Introduction to quantum mechanics and statistical physics, Probability and Statistics, Relativity, advanced Electromagnetism.

RESEARCH EXPERIENCE

2017-now **Postdoctoral research associate**
Department of Inorganic Materials science (IMS), University of Twente, The Netherlands.
Fabrication of memristive Ferroelectric tunnel junctions for brain-inspired neuromorphic applications.
Supervisors: Prof. Guus Rijnders, Prof. Gertjan Koster

2012-2016 **PhD in condensed matter physics**
Institut de Physique et de Chimie des Matériaux de Strasbourg (IPCMS), Strasbourg, France.
« Probing the impact of defects on spin dependent tunneling using photons ».
Supervisors: Samy Boukari and Martin Bowen

2014-2015 **Synchrotron project participant, 5 weeks**
We used synchrotron x-ray photoelectron spectroscopy coupled to a magnetotransport experiment in order to explicitly probe spin- and symmetry-polarized tunneling in solid-state devices.
Soleil synchrotron, Deimos beamline (Saint-Aubin, France).

2012 **Sample growth by pulsed laser deposition**
Internship on a voluntary basis funded by the European Physical Society, Oct. 1st – Dec. 20th.
I used pulsed laser deposition for the fabrication of high quality LSMO thin films in order to create LSMO/STO heterostructures.
IMS, MESA+ Institute for Nanotechnology, the Netherlands. Supervisor: Mark Huijben

Sample processing and device fabrication
Internship during the Master's degree, Feb. 1st - July 30th.
I used optical lithography in a clean room environment to process micrometric size CoFeB/MgO magnetic tunnel junctions.
DMONS, IPCMS, CNRS Strasbourg, France. Supervisor: Bowen Martin

2011 **Hardware and software implementations of a magnetotransport bench**
Internship on a voluntary basis, June 1st - July 30th.
I helped install the infrastructure for a magnetotransport Bench and improved the LabVIEW control program so as to optimize the code and automate data acquisition.
DMONS, IPCMS, CNRS Strasbourg, France. Supervisor: Bowen Martin

SKILLS AND COMPETENCES

Lab Proficient with **electrical transport measurements** in cryogenic environments and magnetic fields. Experience in **sample processing** and **device fabrication**.
Broad experience with **synchrotron x-ray photoelectron spectroscopy** (XPS) and familiar with other synchrotron related techniques such as X-ray Magnetic Circular Dichroism (XMCD).
Experience with **Pulsed Laser Deposition** (PLD) of thin film oxide heterostructures, familiar with sputtering deposition techniques.
Experience with structural and magnetic characterization techniques.
Considerable knowledge of continuous laser probes and related optical elements.

Computer Extensive knowledge of **LabVIEW for instrumentation and data acquisition**.
Other programing languages such as Python, C and LabTalk for modelling and data processing.

Languages French (mother tongue) and proficient English.

LIST OF PUBLICATIONS

In prep. « Modulating the ferromagnet/molecule spin hybridization using an artificial Magnetoelectric », M. Studniarek, S. Cherifi, E. Urbain, **U. Halisdemir**, *et al*.

Submitted « Tunnelling Spintronics Across MgO Driven by Double Oxygen Vacancies », Beata Taudul, Elmer Nahuel Monteblanco, **Ufuk Halisdemir**, *et al.*

2017 « Probing a device's active atoms », M. Studniarek, **U. Halisdemir**, *et al*.

2015 « Exchange bias and room-temperature magnetic order in molecular layers », M. Gruber, F. Ibrahim, S. Boukari, H. Isshiki, L. Joly, M. Peter, M. Studniarek, V. Da Costa, H. Jabbar, V. Davesne, **U. Halisdemir** *et al*. *Nat. Mater.* **14,** 981–984 (2015).

2015 « MgO magnetic tunnel junctions of enduring F-type upon annealing », F. Schleicher, **U. Halisdemir** *et al*. *J. Phys. D. Appl. Phys.* **48,** 435004 (2015).

2014 « Localized states in advanced dielectrics from the vantage of spin- and symmetry-polarized tunnelling across MgO », F. Schleicher, **U. Halisdemir** *et al*. *Nat. Commun.* **5,** 4547 (2014).

GRANT

2012 **University Student Fellowship** from the European Physical Society.
Mobility grant used to start a collaboration between my home institute (IPCMS Strasbourg) and the MESA+ Institute for Nanotechnology prior to my PhD.

TEACHING

2012-2015 **Teaching fellow at the University of Strasbourg, France (192 hours).**
Lab courses, tutorials and lectures in topics such as waves and vibrations, optics and electromagnetism for first and second year students at the University of Strasbourg.

CONFERENCES ATTENDED

2015 **Nanotechnology Students' Summer School,** *MANA, Tsukuba Japan*. Best presentation award.

Workshop on Oxide Electronics 22, *Paris, France*. Poster presentation.

E-MRS Spring Meeting, *Lille, France*. Oral presentation.

CNRS-EWHA Winter School, **Functional Advanced Materials,** *Seoul, South Korea*. Poster presentation.

2014 **Colloque Louis Néel,** *Grenoble, France.* Poster presentation.

Surface Confined Synthesis of Nanostructures, *Baden Baden, Germany*. Poster presentation.

2012 **Fundamentals of nanotechnologies, MESA+,** *University of Twente, the Netherlands*.