R E S U M E

October 2021

PERSONAL DETAILS

Full name: Yaron Amouyal
Identity No. 032071110
Date and place of birth: December 4, 1974, Jerusalem, Israel
Marital status: Married + two
Email: amouya@technion.ac.il
Personal websites: http://materials.technion.ac.il/members/yaron-amouyal/;
https://gtep.technion.ac.il/meet-the-leaders/yaron-amouyal/
Thermoelectric Materials Research Group: https://amouyal.net.technion.ac.il/
ORCID: https://orcid.org/0000-0003-2198-3539

ACADEMIC DEGREES

- Ph.D., 2007, Materials Engineering, Technion – Israel Institute of Technology. Thesis: "Thermodynamics and Kinetics of Grain Boundaries in copper subjected to severe plastic deformation." Advisor: Prof. E. Rabkin.
- M.Sc. *Cum Laude*, 2003, Materials Engineering, Technion – Israel Institute of Technology. Thesis: "Correlation between Grain Boundary energy, crystallography and chemical composition in the intermetallic compound NiAl". Advisor: Prof. E. Rabkin.
- B.Sc. *Cum Laude*, 2001, Materials Engineering, Technion – Israel Institute of Technology.
- B.A. *Cum Laude*, 2001, Physics, Technion – Israel Institute of Technology.

ACADEMIC APPOINTMENTS

- March 2018 – Associate Professor at the Department of Materials Science and Engineering, Technion, Israel.
- October 2011 - 2017 – Assistant Professor at the Department of Materials Science and Engineering, Technion, Israel.
- August 20, 2007 through May 31, 2010 – Post-doctoral Fellow at the Department of Materials Science and Engineering, Northwestern University, Evanston IL.
- January 1, 2009 through December 31, 2009 - Scientific Consultant at the Northwestern University Center for Atom-Probe Tomography (NUCAPT), Department of Materials Science and Engineering, Northwestern University, Evanston IL.
- March 1, 2008 through June 30, 2011 - Senior Researcher at the Technion Research and Development Foundation (TRDF), a Marie Curie IOF/FP-7 Fellow.

RESEARCH INTERESTS

Thermoelectric materials; Nanoscale transport phenomena; Design of materials' functional properties applying microstructure modifications; Atom-probe tomography (APT); First-principles calculations and density functional theory (DFT); Lead-chalcogenide alloys; Diffusion and mass

transport in solids and short-circuit diffusion; Phase transformations in materials; Energetics of interfaces in crystalline solids

TEACHING EXPERIENCE

2020 – "Diffusion and Mass Transport in Solids" (318337) for graduates; Lecturer.

2017 – "An Introduction to Materials Engineering for Civil Engineers" (314535) for undergraduates; Lecturer.

2016 until present – "Transport Properties and Thermoelectric Materials" (318532) for graduates; Lecturer.

2015 – "Advanced Students Laboratories" (315002) for undergraduates; Academic responsibility.

2013 until present – "Advanced Materials Selection" (315012) for undergraduates; Lecturer.

2012 - 2018 – "Thermodynamics of Materials" (315003) for undergraduates; Lecturer.

2001 through 2007 - during my M.Sc. and Ph.D. at the Technion, teaching assistance position in the following courses:

- Diffusion in Solids – undergraduates (Prof. Rabkin, Dr. Ghez);
- Kinetics of Phase Transformations- undergraduates (Prof. Rabkin, Dr. Katsman);
- Optical processes in Materials- undergraduates (Prof. Frey);
- Introduction to Materials Engineering for Mechanical Engineering students- undergraduates (Prof. Bamberger);

Advanced laboratories in Materials Engineering- undergraduates (Dr. Yosefi).

DEPARTMENTAL ACTIVITIES

2012 – 2014: Head of Faculty Seminar Committee
2012 – 2013: Academic Supervisor of the Physical Measurements Laboratory
2012 – 2014: Member of Academic Visitors Committee
2012 – 2017: Member & Head of Computer Committee
2015 – present: Academic Coordinator of the Electron Microscopy Center
2015 – present: Member of the Budget & Planning Committee
2015 – present: Member of the Materials Research Center Board
2016 – 2018: Member of the Undergraduate Studies Committee
2017 – present: Member of the Graduate Studies Committee
2017 – 2018: Faculty Council Secretary
2020 – present: Vice Dean for Graduate Studies

PUBLIC PROFESSIONAL ACTIVITIES

Reviewing of scientific manuscripts

2007 until present - referee for the following peer-reviewed journals: Applied Physics Letters; Acta Materialia; Advanced Functional Materials; ACS Applied Materials & Interfaces; Nature Scientific Reports; Nano Energy; Journal of Applied Physics; Journal of Materials Science; Journal of Alloys and Compounds; Scripta Materialia; Journal of the European Ceramic

Society; Journal of Electronic Materials; Materials & Design; Journal of Nano Materials; Materials Letters; Materials Chemistry and Physics; Philosophical Magazine Letters; Physics Letters A; Applied Physics A; Journal of Physics & Chemistry of Solids; Surface Review and Letters; Solid State Communications; Israel Journal of Chemistry

Reviewing of research proposals

- The Israel Science Foundation (ISF);
- The IAEC-UPBC Joint Research Foundation (Pazy Foundation, Israel);
- The Israeli Ministry of Science, Technology, and Space (MOST;
- The German Research Foundation – Deutsche Forschungsgemeinschaft (DFG);
- The RWTH-Jülich-Technion Umbrella Cooperation;
- The American Physical Society (APS) - Ovshinsky Sustainable Energy Fellowship;
- The Binational US-Israel Science Foundation (BSF).
- The Israeli Ministry of Science and Technology (MOST).

Scientific committees

- Member of the scientific committee: The 16th Israel Materials Engineering Conference (IMEC-16; February 25, 2014), Technion, Israel. Chairing the "Physical Metallurgy" session.
- Member of the scientific committee: The 17th Israel Materials Engineering Conference (IMEC-17; February 1-2, 2016), Bar Ilan University, Israel. Chairing the "Computational Energy Materials" session, Feb 2, 2016.
- Chairing the "Interfaces and Energy related Materials" session at the Israel Society for Microscopy conference (ISM 2016), June 1, 2016; Haifa, Israel.
- Chairing the "Computational II" session at the 18th Israel Materials Engineering Conference (IMEC-18; February 6-8, 2018), Israel.
- USA-Israel Binational Science Foundation (BSF): member of the evaluation committee for the Prof. Rahamimoff Travel Grants for Young Scientists (2018).
- The Israeli Ministry of Science and Technology (MOST): member of the evaluation committee for binational research proposals (2019).
- Co-chairing the scientific committee of the Israel Vacuum Society meeting (IVS-2019).
- Member in a Faculty promotion committee, Tel-Aviv University (2020).
- Member in the scientific committee of the Israel Vacuum Society meeting (IVS-2020).
- Member in the scientific committee of the Israel Society for Microscopy meeting (ISM-2020).
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Editing of Scientific Journals

- Yaron Amouyal & Guido Schmitz, Guest Editors of the *MRS Bulletin*, Vol. **41** January 2016 – A special issue on Atom Probe Tomography (APT).
- Yaron Amouyal - a Guest Editor of the Special Issue on *Topological Insulators with Enhanced Transport Properties for Thermoelectric Energy Conversion* in the *Materials* Journal (2019), MDPI publishing group.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

The Minerals, Metals and Materials Society (TMS)
Materials Research Society (MRS)
American Association for the Advancement of Science (AAAS)
American Physical Society (APS)
Israel Physical Society (IPS)
International Thermoelectric Society (ITS)

FELLOWSHIPS, AWARDS AND HONORS

- 2021 - The Ray & Miriam Klein Research Prize. Granted for scientific activity in "The origin of the vibrational properties of thermoelectric perovskites".
- 2016 – The Miriam and Aaron Gutwirth Science-Based Industries Center; A Research Prize on the scientific activity: "Defects and Interfaces in Thermoelectric Materials".
- 2004 – The 2nd prize in poster competition (entitled "Scanning probe microscopy study of grain boundary migration in NiAl") held in Krakow, Poland.
- 2003 – Prize in memorial of Prof. Katz given for my M.Sc. research, Technion – Israel Institute of Technology.
- 2001 – 1st Prize in memorial of Mr. Shenkar given for my B.Sc. project, Technion – Israel Institute of Technology.

RESEARCH GRANTS (recent 5 years)

Competitive

- **2019** – *The Technion Vice President for Research Funds.* Total: $25,000. Title: **Novel Design of Thermoelectric Materials for Energy Conversion.** PI: Dr. Yaron Amouyal.
- **2019** – The Technion Helen Diller Quantum Center; an equipment grant. Total: $40,000. Title: **Hall coefficient measurements at high temperatures**. PI: Dr. Yaron Amouyal.
- **2019 – *The Waterloo-Technion Cooperation Program;*** Total: $60,000 CDN for two (2) years. PIs: Dr. Yaron Amouyal (Technion) and Dr. Holger Kleinke (Uni. Waterloo, Canada). Title: **Nanostructured topologically- insulating bismuth telluride for thermoelectric applications**
- **2018 - The Israel Science Foundation (ISF), an institutional research grant;** Total: 1,100,000 NIS. PIs: Dr. Eugen Rabkin, Dr. Gitti Frey, and Dr. Yaron Amouyal (Technion, Israel).
- **2018 - The Israel Science Foundation (ISF), an individual research grant**; Total: 280,000 NIS per annum, for four (4) years. PI: Dr. Yaron Amouyal – Technion. Grant no. 1997/18. Title: **Defects and Interfaces in Thermoelectric Oxides**
- **2018 –** The *Asher Space research Institute (ASRI)* at the Technion. Total: $10,000. **Title: Development of thermoelectric PbTe-based compounds for power generation in deep space missions** PI: Dr. Yaron Amouyal.

- **2017 – The Israeli Ministry of Energy**; Total: 482,000 NIS, three (3) years. PI: Dr. Yaron Amouyal (Technion, Israel). Title: **Ceramic Thermoelectric Materials for Waste Heat Harvesting**
- **2016 – The U.S.A.-Israel Binational Science Foundation (BSF);** Total: $ 90,000, two (2) years. PIs: Dr. Yaron Amouyal (Technion, Israel) and Dr. Julio Martinez (New Mexico State University, Las Cruces NM, USA). Title: **Rational Design of Nanostructured Kondo Topological Insulators: A New Generation of Highly Efficient Thermoelectric Materials**
- **2015 – The Waterloo-Technion Cooperation Program;** Total: CAN$ 30,000, two (2) years. PIs: Dr. Yaron Amouyal (Technion, Israel) and Prof. Holger Kleinke (Waterloo Uni., Canada). Title: **Formation of Periodic Defects at the Nanometric Length Scale in Thermoelectric Compounds for Energy Harvesting**

Invited lectures in international conferences

1. November 3, 2011, Materials Design MedeA Users Group Meeting, Boston MA, USA: "On the combination of atom-probe tomography and first-principles calculations for studying atomistic-level phenomena in solids".
2. June 2012, 8th International Conference on Diffusion in Solids and Liquids (DSL-2012), Istanbul, Turkey: "On the combination of atom-probe tomography and density functional theory (DFT)-based calculations for studying interfacial segregation phenomena".
3. February 5, 2014, 79th meeting of the Israel Chemical Society (ICS), Tel-Aviv, Israel: "Local Electrode Atom-Probe (LEAP) Tomography: Understanding of Atomistic Level Phenomena in Nickel-Based Alloys".
4. February 25, 2014, The 16th Israel Materials Engineering Conference (IMEC-16), Technion, Israel: "Improving performances of thermoelectric materials for energy harvesting: experimental and computational approaches".
5. March 25, 2014, "Nano-Israel": 4th International Nanotechnology Conference and Exhibition; Tel-Aviv, Israel: "New Frontiers in Thermoelectric Materials".
6. June 23-27, 2014. Collaborative Conference on Materials Research (CCMR): "New Frontiers in Thermoelectric Materials: Computational and Experimental Approaches". Incheon, South Korea.
7. Feb 26, 2015. The Israel Institute of Chemical Engineers (IICHE) 2015: "Novel Approaches in Development of Thermoelectric Materials for Energy Harvesting". Tel-Aviv, Israel.
8. September 09, 2015. The 33rd Israel Vacuum Society conference (IVS 2015): "Experimental and computational approaches in materials design for thermoelectric applications". The Weizmann Institute, Israel.
9. February 23, 2016. Energy Materials Nanotechnology (EMN) Meeting on Thermoelectric Materials: "Effects of silver alloying on microstructure evolution and thermoelectric performance of PbTe". Orlando FL, USA.
10. April 19, 2016. Israel Sustainable Energy Society Annual Meeting (ISES 2016): "Novel approaches in development of thermoelectric materials for energy harvesting: PbTe and beyond."
11. June 26-30, 2016, 12th International Conference on Diffusion in Solids and Liquids (DSL-2016), Split, Croatia: "Controlling lattice thermal conductivity of thermoelectric materials via microstructure modulations".

12. May 29, 2019, 53rd Annual Meeting of the Israel Society for Microscopy (ISM 2019), Tel-Aviv, Israel: "Tracking microstructure evolution of Ag-alloyed PbTe for thermoelectric energy conversion applying atom probe tomography".
13. July 8, 2019, 3rd Israeli Conference on Computational Modeling of Molecules and Solids, Ben-Gurion University, Israel: "On the origin of vibrational properties of calcium manganite based thermoelectric compounds".
14. February 11, 2021, 45th International Conference and Expo on Advanced Ceramics and Composites (ICACC2021) of the **American Ceramic Society**. FOCUSED SESSION 2: Materials for Thermoelectrics: "Enhanced Charge Transport in Ca_2MnO_4 Layered Perovskites by Point Defect Engineering".
15. June 02, 2021, *NanoIL Connect* – The International Technology Conference in Israel: "Atom Probe Tomography: A Cornerstone in Materials Characterization".

Invited Lectures in Departmental Colloquia & Others

1. January 31, 2011, Nuclear Research Center Negev (NRCN): "An atom-probe tomography and first-principles study of phase partitioning and interfacial segregation in nickel-based superalloys".
2. February 3, 2011, Department of Materials Engineering, Technion, Haifa, Israel: "On the combination of atom-probe tomography and first-principles calculations for studying atomistic-level phenomena in solids".
3. March 16, 2011, Department of Applied Physics, Hebrew University, Jerusalem, Israel: "On the combination of atom-probe tomography and first-principles calculations for studying atomistic-level phenomena in solids".
4. November 7, 2011, Department of Materials Science and Engineering, Northwestern University, Evanston IL, USA: "On the combination of density functional theory with atom-probe tomography for studying atomistic-level phenomena in solids".
5. December 11, 2011, Department of Chemical Engineering and Biotechnology, Ariel University Center of Samaria: "Advanced characterization techniques supplemented by ab-initio computational methods in service of materials science".
6. February 25, 2013: The 27th Umbrella Symposium for the Development of Joint Cooperation Ideas, Nanoscale Physics and Chemistry as Drivers for Future Technological Developments, Jülich Research Center, Germany: "New Frontiers in Thermoelectric Materials for Energy Harvesting".
7. July 14, 2014: Sandia National Laboratories, Livermore CA, USA: "Improving performances of thermoelectric materials for energy harvesting: Experimental & computational approaches."
8. September 23, 2014: Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Denmark: "Enhancement of thermoelectric performance by nanometer-size defects".
9. March 9, 2015: Max-Planck Institute, Düsseldorf, Germany: "Thermoelectric materials design via microstructure and composition manipulations: experimental and computational approaches".
10. May 11, 2015: Institute of Mineral Engineering (GHI), Aachen Institute for Advanced Study in Computational Engineering Science (AICES), RWTH Aachen University, Germany: "Experimental and computational approaches in materials design for thermoelectric applications".
11. May 18, 2015: Institute of Materials Physics, University of Münster, Germany: "Experimental and computational approaches in materials design for thermoelectric applications".

12. July 02, 2015: Institute of Materials Physics, University of Stuttgart, Germany: “Experimental and computational approaches in materials design for thermoelectric applications”.
13. February 17, 2016: National Institute for Materials Science (NIMS), Tsukuba, Japan: “Tailoring Thermoelectric Materials Properties: A Multi-scale Approach”.
14. March 02, 2016: Department of Chemistry, Bar-Ilan University: “Experimental and computational approaches in materials design for thermoelectric applications”.
15. May 20, 2021: Department of Materials Engineering, Ben Gurion University of the Negev: ”Charge and heat transport in calcium-manganate oxides for thermoelectric energy harvesting”.