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CURRICULUM VITAE

DORON SHILO

PERSONAL:

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ACADEMIC DEGREES:

2003 Ph. D., Materials Engineering, Technion – Israel Institute of Technology, Haifa, Israel.

1999 M. Sc., Materials Engineering, Technion – Israel Institute of Technology, Haifa, Israel.

1996 B. Sc., *Summa Cum Laude*, Materials Engineering, Technion – Israel Institute of Technology, Haifa, Israel.

1996 B. Sc., *Summa Cum Laude*, Physics, Technion – Israel Institute of Technology, Haifa, Israel.

ACADEMIC APPOINTMENTS:

2024 - Zandman Chair in Engineering

2017 - Professor, Faculty of Mechanical Engineering, Technion – Israel Institute of Technology, Haifa, Israel.

2010 - 2017 Associate Professor, Faculty of Mechanical Engineering, Technion – Israel Institute of Technology, Haifa, Israel.

2004 - 2010 Senior Lecturer, Faculty of Mechanical Engineering, Technion – Israel Institute of Technology, Haifa, Israel.

2003-2004 Postdoctoral Researcher, Graduate Aeronautical Laboratories, Caltech – California Institute of Technology, USA.

PROFESSIONAL EXPERIENCE:

06-09/2013 Visiting Academic scientist, General Motors R&D Center, Warren, MI, USA.

RESEARCH INTERESTS:

- Mechanics of active materials
- Mechanics of material interfaces
- Mechanics of materials at small scales
- Mechanics of biogenic materials

- Mechanical-biomolecular interactions

TEACHING EXPERIENCE:

At Technion:

Graduate courses lecturer:

2005- 036065 - Electro and Magneto Mechanics for Actuation and Sensing (a renovated flipped classroom course).

Undergraduate courses lecturer:

2005: 035027 - Experimental methods
2006-2011: 034028 - Solid Mechanics 1
2007-2008: 035041 - Mechanics of Microsystems
2011-2023: 034044 - Introduction to Experimental Methods (developed a new syllabus)
2024- 034057 – Advanced Lab in Mechanical Engineering (a newly developed course).

Caltech:

10/2003–02/2004: Substitute Lecturer, California Institute of Technology. Mechanics of Structures and Solids, for graduate students.

FACULTY ACTIVITIES:

2023- Member, Graduate Studies Committee

2016-2020 : Member, Undergraduate Studies Committee

2014-2015 : Head, Material Mechanics and MEMS Program, Faculty of Mechanical Engineering, Technion

2013-2014 : Head, Laboratories Committee, Faculty of Mechanical Engineering, Technion

2012-2013 : Head, Optical Engineering Program, Faculty of Mechanical Engineering, Technion

2011-2013 : Vice Dean for Undergraduate Studies, Faculty of Mechanical Engineering, Technion

2010-2013 : Member, Graduate Studies Committee

2006-2007: Head, Materials Mechanics Center (09/2006-09/2007)

2006-2010: Member, Danziger Laboratories Committee

2006 - : Faculty representative at the Department of Materials Engineering

2005 - : Head and founder of the Laboratory for Nano and Micro Mechanics of Materials

TECHNION ACTIVITIES:

2024 -	Deputy Senior Vice President for the Promotion of Learning and Teaching
2020-2023	Vice Dean for Undergraduate Studies
2021-	Member, Preparatory Committee of the Department Humanities and Arts
2016-2019	Member, Academic Studies Committee (VAADAT HAKEVA).
2015-2020	Head, Mechanical Engineering Program at the International School of the Technion.
2007-2011 :	Member, Multidisciplinary Program of Nano-Science and Nano-Technology

PUBLIC PROFESSIONAL ACTIVITIES:

2024 -	Head, International Scientific Advisory Board of the FerrMion Project (https://ferrmion.eu/en/)
2018 -	Member of the International Advisory Board for the Institute of Thermomechanics, Czech Republic Academy of Science.
2018 - 2019	Science Advisor (member of a panel that select grants) to the U.S.-Israel Binational Science Foundation (BSF).
2009 - 2015	Associate Editor, Experimental Mechanics (IF 2.8).
2008 - 2023	Member of the Board of Review (Key Reader), Metallurgical and Materials Transactions A.

SPECIAL PROFESSIONAL ACTIVITIES:

Reviewer for research grant proposals:

ERC Advanced, German Research Foundation (DFG), Czech Science Foundation, Israel Science Foundation, Pazi Foundation, Technion Gurwin Foundation.

Journal refereeing:

J. Mech. Phys. Solids, Phys. Rev. B., Phys. Rev. Lett., Experimental mechanics, Sensors and Actuators A, Nanotechnology, Journal of Materials Science, Colloids and Surfaces A, Material Mechanics, Materials Science and Technology, Smart Materials and Structures, American Mineralogist, Apl. Materials.

MEMBERSHIP IN PROFFESIONAL SOCIETIES:

SEM - Society of Experimental Mechanics
SES – Society of Engineering Science
ISTAM – Israel Society for Theoretical and Applied Mechanics

HONORS:

2016	Henry Taub Prize for Academic Excellence
2015	Ray and Miriam Klein Research Prize
2004	Lady Davis Fellowship (07/2004 – 08/2004)
2003	Lester Deutsch Fellowship for postdoctoral scholars at Caltech
2003	Certificate for exceptional Ph.D. dissertation, Technion – Israel Institute of Technology
2002	Shenkar Family Prize for Ph. D. studies
2002	Miriam and Aaron Gutwirth Memorial Fellowship as a Summa Cum Laude award in Materials Engineering
2001	Maayan and Dr. Avishay Katz Prize for excellent research in Materials Engineering
2000-2002	Four Technion fellowships for distinction during Ph.D. studies
1996	Shenkar Family Prize for Best Project in Materials Engineering
1992-1996	President's Honor Student List for undergraduate students, each semester

GRADUATE STUDENTS [*1]:

M. Sc. Students:

Completed Theses [21]:

1. Eran Ben-David 2005-2008, "A new instrument for tensile testing of thin free-standing films at high strain rates" [J29; C15][♦], primary advisor (Profs. D. Rittel and D. Elata co-advisors). Currently: PhD student in my research group and Head of an R&D group in RAFAEL.

2. Yossi Abu 2005-2008, "Micro mechanics of domain switching in ferroelectric materials".

3. Shahaf Vollach 2005-2008, "The mechanical response of shape memory alloys under a rapid heating pulse", [J32; C4, C36, C38]. Award: Barazani Prize for Excellence, 2009. Currently: PhD student in my research group and Head of an R&D group in RAFAEL.

4. Oren Kanner 2008-2010, "Ferromagnetic shape memory alloy actuators", [J40]. Awards: Lady Davis Fellowship (2008-2009), Gutwirth Memorial Fellowship for Excellence (2009-2010). Currently: PhD student in Yale, USA.

5. Yarden Weber 2006-2011, "Real-time health and stress monitoring of composite materials using magnetostrictive fillers", [C14, C16, C17]. Award: Israel representative in the SAMPE-Europe Student Seminar contest. Currently: Research Fellow in RAFAEL

[*] As a single primary supervisor, unless written differently

[♦] J## denotes Journal publication number ##. C## denotes Conference presentation number ##.

6. Alex Yoffe 2011-2014, “Modeling the magneto-mechanical response of magnetostrictive composite materials”, [J49, C46], *Transferred to a direct PhD program*.

7. Noam Zerihan 2013-2015, “Twin boundary motion in ferroic materials”, [J47; C47], *Transferred to a direct PhD program*.

8. Yulia Marom 2014-2016, “Characterization of Bio-Mechanical Processes Occurring in the Placenta under Mechanical Stress”, [J53; C49]. Award: Jacobs Fellowship for Excellence, 2016. *Transferred to a direct PhD program*.

9. Nehara Adelsberg 2014-2016, “Wireless Thin Layer Force Sensors Based on Magnetostrictive Composite Material”, [J61]. Currently: R&D Engineer in RAFAEL.

10. Yoav Malka 2014-2016, “A fast and powerful release mechanism based on pulse heating of shape memory wires”, [J62]. Award: Gemunder Prize for Space-Defense Related Technologies, 2016. Currently: Head of a R&D group in RAFAEL.

11. Dekkel Avraham 2015-2017 (Brakim program – a special BSc + MSc program for distinguished students), “Development of a miniature, battery-less, self-propagating device based on shape memory alloys”, [J67].

12. Uria Heller 2014-2018, “Development of load-control mechanical pulser based on shape memory wires”, [J73].

13. Emil Bronstein 2016-2018, “Dynamics of twinning transformation in Cu-Al-Ni”, [C50, C57 ; J70, J72].

14. Bar Danino 2016-2018 (Brakim program), “Atomistic calculation of twin wall properties and dynamics based on an atomistic Landau-Ginzburg potential“, Co-advisor (with Assoc. Professor Dan Mordehai as Primary advisor), [J75].

15. Gil Gur-Arie 2017-2019 (Brakim program), “Atomistic calculation of relations between material properties and twin wall dynamics“, Co-advisor (with Assoc. Professor Dan Mordehai as Primary advisor), [J75].

16. Asaf Mizrahi 2018-2020, “Twin boundary structure and mobility in shape memory alloys”, [J73, J77].

17. Yeshurun Cohen (2019-2023), “Sinter-based Additive Manufacturing of Shape Memory Alloys”, [J84].

18. Arnon Rosenberg (2019-2022), “Micro-Mechanical Tamper Protection Device based on Shape Memory Alloy”.

19. Meron Doar (2022-2024), “Thermodynamics and microstructure of phase boundaries in shape memory alloys”.

20. Haile Gebrehiwet Seyoum (2022-2024), “Micro-Avalanches and Post-avalanche Relaxation Dynamics in Deformation Twinning”, [J90, J22], Awards: Prize for Excellent Thesis in the name of Professors Arthur Shavit and Itzhak Shai.

21. Alon Addess (2022-2024, Brakim Program), "Additive Manufacturing of Ni-Ti Shape Memory Alloys through sinter based MoldJet Technology and the Effects of Powder Pretreatment", [J21], Awards: Prize for Excellent Thesis in the name of Vassilios Sarafis.

Theses in Progress [3]:

22. Michael Cohen (Since October 2023), "Microstructural Mechanisms of Transformation in Liquid Crystal Elastomers".

24. Shimon Bettan (Since October 2023, Brakim Program), "Monitoring stochastic mechanical behaviors by data-driven analysis of acoustic emissions", Awards: Prize for Excellent Brakim and Reamim Students in the name of Sydney and Beatris Wolberg.

24. Rotem Mergi (Since October 2023), "Mechanical Behavior of Nanodomain-Dominated Functional High Entropy Alloys".

Ph.D. students:

Completed Theses [11]:

1. Yaniv Ganor 2004-2008, "Magneto-mechanical characteristics of ferromagnetic shape memory alloys", [J20, J24, J27, J28, J30 ; C10, C11, C13, C30, C31, C34, C35, C37, C39, C41]. Awards: (1) Jacobs Foundation Prize for Excellence, 2007; (2) Barazani Prize for Excellence, 2009. 2009-2011: Post-doctoral fellow at the University of Minnesota, under the supervision of Prof. R. D. James. Currently: R&D engineer in the USA.

2. Haika Drezner 2006-2011, "Nanoscale modulus mapping: implementation on material interfaces and biogenic materials", [J26, J34; C2, C5, C12, C32, C40, C44].

3. Eilon Faran 2008-2012, "Dynamics of twinning processes in active materials", [J33, J36, J37, J38, J39; C6, C8, C18, C42, C43]. Awards: Departmental Excellence Fellowship (2009-2010), Gutwirth Memorial Fellowship for Excellence (2009-2010), Departmental Excellence Fellowship (2010-2011), Jacobs Prize for Excellent Publication (awarded for the best three student publications in the Technion in 2011). Currently: Research fellow in my research group.

4. Eran Ben-David 2010-2015, "Investigation of the Mechanical Response and Characteristics of Thin Free-standing Films at Various Strain Rates", [J43, J44, J45, J54], Primary advisor (Prof. D. Rittel, co-advisors). Currently: Head of an R&D group in RAFAEL.

5. Meni Kabla 2009-2015, "Fabrication, characterization, and application of actuators based on thin shape memory alloy films", [J42, J46, J51, J54, J57, J59, C19]. Currently: Head of an R&D group in RAFAEL.

6. Alex Yoffe 2014-2017, "Magnetostrictive composites for wireless stress sensing applications", [J49, J60, J61, J64; C46]. Currently: System Engineer in KLA.

7. Shahaf Vollach 2010-2017, "The mechanical response of shape memory alloys under a rapid heating pulse", [J55, J58, J63, J94; C7, C9]. Currently: Research Fellow in RAFAEL.

8. Noam Zerihan 2015-2018, "Barriers, mechanisms of motion, and kinetic laws for twin wall dynamics in ferroic materials", [J47, J66, J68, J71, J74; C11, C47]. Award: Departmental Excellence Fellowship, RBNI Fellowship (2018). Currently: Engineer in RAFAEL.

9. Yulia Marom 2016-2020, "Characterization of Bio-Mechanical Processes Occurring in the Placenta under Mechanical Stress", [J53, J79, J80; C49, C53]. Award: Jacobs Fellowship for excellence (2016). Currently: Research Fellow in the Single Molecule Biophysics and Bio-Nano Technology Lab, Technion.

10. Asaf Dana 2018-2021, "Uncovering the kinetics of the martensitic transformation across the scales", [J78, J81, J83, J94; C12], Awards: Daniel Fellowship for Excellence (2019-2020), Jacobs Fellowship for Excellence (2020-2021), Departmental Excellence Fellowship (2020-2021). Currently: Post-doctoral Fellow at Texas A&M University.

11. Emil Bronstein (Since February 2020), "Novel methods for measurement and data-driven analysis of acoustic and magnetic emissions", Primary advisor (Prof. Ronen Talmon, co-advisors), [J82, J83, J85, J86, J87, J88, J90, J93; C59], Awards: Daniel Memorial Fellowship for Excellence (2020-2021). Azrieli Fellowship (2021-2023), Jacobs Prize for Excellent Publication (2022), Departmental Excellence Fellowship (2021-2024), Prize for Excellent Thesis in the name of Professor David Pnueli and Olga Pnueli, Rothschild Postdoctoral Fellowship. Currently: Post-doctoral Fellow at ETH, Zurich.

Theses in Progress [1]:

12. Meron Doar (since 2024), "Thermodynamics and microstructure of phase boundaries in shape memory alloys".

Post-Doctoral and Research Fellows:

1. Dr. Yaniv Ganor, September 2008 – March 2009, [J40], MAFAT-MOD grant.

2. Dr. Eilon Faran, July 2012 – , [J39, J47, J48, J52, J56, J65, J66, J68, J70, J71, J72, J73, J74, J76, J77, J78, J81, J84, J87, J88, J90, J91, J92, J93, J95 ; C10, C11, C12, C42, C43, C45, C47, C48, C50, C51, C52, C56, C57, C58, C59], ISF grants 1341/10 and 1268/14, NSF-BSF grant 2017-2020, ISF grant 1309/18, IFF grant 1600/22. Since 2024 – Outstanding Research Fellow of the Israeli Council for Higher Education.

3. Dr. Yossi Ezer, 10-12/2013, MAFAT-MOD grant.

RESEARCH GRANTS♣:

Total funding: $3.418M in research grants plus $458k in equipment grants

2025-2026 Tokushima-Technion Research Grant, $50k, *Similarities and differences between earthquakes and failure of composite materials*, with Prof. Toshitaka Baba as co-PI.

♣ As a single PI, unless written differently

2024 RAFAEL, $53k, *Mechanical mechanisms based on shape memory alloys*.

2022-2026 **Israel Science Foundation**, $440k, *Novel methods for measuring and analyzing avalanche events*.

2022 **Israel Science Foundation, Mid-career Equipment Grant**, $158k, *In-situ under-microscope mechanical testing system*.

2022-2024 Technion Additive Manufacturing Center (TAMC), $110k, *Additive Manufacturing of Ni-Ti SMA using solid-state process.* With Prof. Eugen Rabkin and Dr. Eilon Faran as co-PIs.

2019-2020 Israel Defense Ministry - MAFAT, $30k, *3D printing of Nitinol*.

2019-2020 Technion Foundation for Defense Research, $27k, *A MEMS Tamper Protection Device based on Shape Memory Alloy Technology*.

2018-2019 Israel Defense Ministry - MAFAT, $55k, *3D printing of Nitinol*.

2018-2022 **Israel Science Foundation**, $340k, *Motion of phase boundaries in shape memory alloys: Mechanisms of motion, evolution of microstructure and kinetic relations*.

2018-2022 **Israel Science Foundation**, $275k, *Stretch-induced biomechanical changes in fetal membranes*, as a collaborator with Prof. Eliezer Shalev as PI.

2018-2020 Technion-GTIIT Collaboration Foundation, $25k, *How fast is the martensitic transformation in shape memory alloys?*, with Prof. Klaus-Dieter Liss from GTIIT as co-PI.

2017-2020 **United States – Israel Binational Science Foundation (NSF-BSF program)**, $195k, *Twin boundary structure and mobility in shape memory alloys.* With Prof. Peter Mullner from Boise State University as co-PI.

2016-2017 Technion Foundation for Defense Research, $18k, *Release mechanism for missile steering systems by means of a novel actuator based on shape memory wires subjected to high strain rates.*

2015-2016 Technion Foundation for Defense Research, $35k, *Release mechanism for missile steering systems by means of a novel actuator based on shape memory wires subjected to high strain rates.*

2015-2016 Israel Defense Ministry - MAFAT, $65k, *Advanced Micro Actuators*.

2014-2018 **Israel Science Foundation**, $305k, *Barriers, mechanisms of motion, and kinetic laws for twin boundary dynamics in ferroic materials*.

2014-2015 Israel Defense Ministry - MAFAT, $65k, *Advanced Micro Actuators*.

2013-2016 PAZY Foundation, $150k, in collaboration with RAFAEL, *Thin Layer Force Sensors Based on Magnetostrictive Composite Material.*

2013-2014 Israel Defense Ministry - MAFAT, $52k, *Advanced Micro Actuators*.

2012-2012 RAFAEL, $26k, *Structural Health Monitoring Based on Magnetostrictive Materials*.

2012-2013 Israel Defense Ministry - MAFAT, $52k, *Advanced Micro Actuators*.

2012-2013 Israel Defense Ministry - MAFAT, $40k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel as CIs.

2012 Israel Defense Ministry - MAFAT, $93k, *Purchase grant for Advanced Control Unit for Hysitron TriboIndenter.*

2011-2012 Israel Defense Ministry - MAFAT, $43k, *Advanced Micro Actuators*.

2011-2012 Israel Defense Ministry - MAFAT, $43k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel as CIs.

2010-2014 **Israel Science Foundation**, $225k, *Multiscale Dynamics of Twinning Transformation in Ferroelastic and Ferroelectric Materials*.

2010-2013 General Motors, $245k, *High strain-rate electrical actuation of shape memory alloy wires.*

2010-2011 Israel Defense Ministry - MAFAT, $43k, *Advanced Micro Actuators*.

2010-2011 Israel Defense Ministry - MAFAT, $43k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel as CIs.

2009-2010 Israel Defense Ministry - MAFAT, $43k, *Advanced Micro Actuators*.

2009-2010 Israel Defense Ministry - MAFAT, $43k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel as CIs.

2008-2009 Israel Defense Ministry - MAFAT, $43k, *Advanced Micro Actuators*.

2008-2009 Israel Defense Ministry - MAFAT, $56k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel and Dr. D. Elata as CIs.

2008-2009 Russel Berrie Nanotechnology Institute – NEVET program, $40k, *Nano-structure and local mechanical characteristics of natural bio-composites*, with Prof. Emil Zolotoyabko as co-PI.

2007-2008 Israel Defense Ministry - MAFAT, $36k, *Advanced Micro Actuators*.

2007-2008 Israel Defense Ministry - MAFAT, $44k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel and Dr. D. Elata as CIs.

2007-2008 Israel Defense Ministry - MAFAT, $24k, *Advanced Micro Actuators*.

2006 Israel Defense Ministry - MAFAT, $44k, *Nanoscale Mechanics of Materials*, PI, with Prof. D. Rittel and Dr. D. Elata as CIs.

2005-2008 **Israel Science Foundation**, $132k, *Mechanics and Kinetics of Domain Switching in Ferroelectric Materials*.

2005 **Israel Science Foundation**, $195k, *Equipment grant for the Laboratory for Micro and Nano Mechanics of Materials*.

2005-2007 Israel Defense Ministry - MAFAT, $66k, *Advanced Micro Actuators*.

2005 Israel Defense Ministry - MAFAT, $150k, *Purchase grant for High speed Imaging System*, with Prof. D. Rittel and Dr. D. Elata.

2005 Israel Defense Ministry - MAFAT, $41k, *Purchase grant for High Magnetic Field Pulser*.

2004 Israel Defense Ministry - MAFAT, $44k, *Advanced Micro Actuators*.

PUBLICATIONS:

Theses:

M. Sc. Thesis Topic:

Strain Analysis in Near Surface Crystalline Layers, Technion (1999), Advisor: Prof. Emil Zolotoyabko.

Ph. D. Thesis Topic:

Interaction of dynamic deformation fronts induced by intrinsic dislocations in single crystals, Technion (2003), Advisor: Prof. Emil Zolotoyabko.

Refereed papers in professional journals:

Published papers:

1. N. Mainzer, **D. Shilo**, E. Zolotoyabko, G. Bahir, A. Sher, "Characterization of CdTe/$Hg_{1-x}Cd_xTe$ heterostructures by high-resolution x-ray diffraction, *J. Electron. Mater.* **26**, 606-609 (1997).

2. N. Mainzer, **D. Shilo**, E. Zolotoyabko, G. Bahir, A. Sher, K. Cytermann, R. Brener, "Measurement of depth dependant atomic concentration profiles in CdTe/$Hg_{1-x}Cd_xTe$ structures", *J. Appl. Phys* **82**, 2869-2276 (1997).

3. E. Zolotoyabko, **D. Shilo**, "Control of static strains in crystals by dynamic pressure of phonon flow", *Ultrasonics* **36**, 403-408 (1998).

4. E. Zolotoyabko, **D. Shilo**, W. Sauer, E. Pernot, and J. Baruchel, "Visualization of 10 μm surface acoustic waves by stroboscopic x-ray topography", *Appl. Phys. Lett.* **73**, 2278-2280 (1998).

5. E. Zolotoyabko, **D. Shilo**, W. Sauer, E. Pernot, and J. Baruchel, "Stroboscopic x-ray topography in crystals under 10-μm surface acoustic wave excitation", *Rev. Sci. Instrum.* **70**, 3341-3345 (1999).

6. E. Zolotoyabko, **D. Shilo**, W. Sauer, E. Pernot, and J. Baruchel, "Stroboscopic diffraction imaging of high-frequency surface acoustic waves", *ESRF Newsletter* **32**, 20 (1999).

7. Y. Avrahami, **D. Shilo**, N. Mainzer, E. Zolotoyabko, "Study of atomic diffusion in crystalline structures by high-resolution x-ray diffraction", *J. Cryst. Growth* **198/199**, 264-269 (1999).

8. Y. Roichman, A. Berner, R. Brener, C. Cytermann, **D. Shilo**, E. Zolotoyabko, M. Eizenberg, & J. Osten, "Co silicide formation on epitaxial $Si_{1-y}C_y$/Si(001) layers", *J. Appl. Phys.* **87**, 3306-3312 (2000).

9. E. Berkowicz, D. Gershoni, G. Bahir, E. Lakin, **D. Shilo**, E. Zolotoyabko, A. C. Abare, S. P. Denbaars, & L. A. Coldren, "Measured and calculated radiative lifetime and optical absorption of $In_xGa_{1-x}N$/GaN quantum structures", *Phys. Rev. B* **61**, 10994-11008 (2000).

10. E. Zolotoyabko, **D. Shilo**, and E. Lakin "X-ray imaging of acoustic wave interaction with dislocations", *Mater. Sci. & Eng.* **A309/310**, 23-27 (2001).

11. **D. Shilo**, E. Lakin, and E. Zolotoyabko, " Comprehensive strain analysis in thin films, based on high-resolution x-ray diffraction: application to implanted $LiNbO_3$", *Phys. Rev B* **63**, 205420 (2001).

12. **D. Shilo**, E. Lakin, and E. Zolotoyabko, "Measurement of subtle strain modifications in hetetostructures by using x-ray mapping in reciprocal space", *J. Appl. Crystl* **34**, 715-721 (2001).

13. **D. Shilo** and E. Zolotoyabko, "Visualization of surface acoustic wave scattering by dislocations", *Ultrasonics* **40**, 921-925 (2002).

14. **D. Shilo**, E. Lakin, E. Zolotoyabko, J. Hartwig, and J. Baruchel, "Visualization of acoustic wave fronts in crystals by stroboscopic x-ray topography", *Synchrotron Radiation News* **15**, 17 (2002).

15. **D. Shilo**, D. Sherman, I. Beery, and E. Zolotoyabko, "Large local deflections of a dynamic crack front induced by intrinsic dislocations in brittle single crystals", ***Phys. Rev. Lett.* 89**, 235504 (2002).

16. **D. Shilo,** E. Lakin, E. Zolotoyabko, J. Härtwig and J. Baruchel, " X-ray imaging of surface acoustic waves generated in semiconductor crystals by an external transducer", *Appl. Phys. Lett.* **82**, 1374-1376 (2003).

17. **D. Shilo** and E. Zolotoyabko, "Visualization of short surface acoustic waves by x-ray topography", *J. Phys. D* **36**, A122-A127 (2003).

18. **D. Shilo** and E. Zolotoyabko, " Stroboscopic x-ray imaging of vibrating dislocations excited by 0.58 GHz phonons", ***Phys. Rev. Lett.*** **91** 115506 (2003).

19. **D. Shilo**, G. Ravichandran, and K. Bhattacharya, "Investigation of twin wall structure at the nanometer scale using atomic force microscopy", ***Nature Mater.*** **3**, 453-457 (2004).

20. Y. Ganor* and **D. Shilo**, "High sensitivity nanoscale mapping of elastic moduli", *Appl. Phys. Lett.* **88**, 233122 (2006).

21. R. Zhang[1]**, D. Shilo**, G. Ravichandran, and K. Bhattacharya, "Mechanical characterization of released thin films by contact loading", *J. Appl. Mech.* **73**, 730-736 (2006).

22. **D. Shilo**, E. Burcsu[1], G. Ravichandran, K. Bhattacharya, "A model for large electrostrictive actuation in ferroelectric single crystals", *Int. J. Solids and Structures* **44**, 2053-2065 (2007).

23. **D. Shilo**, A. Mendelovich[2], and V. Novak[3], "Investigation of twin boundary thickness and energy in CuAlNi shape memory alloy", *Appl. Phys. Lett.* **90**, 193113 (2007).

24. Y. Ganor, **D. Shilo**, J. Messier[4], T. W. Shield, R. D. James, "Testing system for ferromagnetic shape memory microactuators", *Rev. Sci. Instrum.* **78**, 073907 (2007).

25. **D. Shilo** and R. Ghez[5] "New wine in old flasks: Integrating the Clausius-Clapeyron equation", *Eur. J. Phys.* **29**, 25-32 (2008).

26. **D. Shilo**, H. Drezner and A. Dorogoy[6] "Investigation of interface properties by nanoscale elastic modulus mapping", ***Phys. Rev. Lett.*** **100**, 035505 (2008).

27. Y. Ganor, and **D. Shilo**, "Modulus mapping of nanoscale closure variants in Ni-Mn-Ga", *Appl. Phys. Lett.* **93,** 031905 (2008).

28. Y. Ganor, **D. Shilo**, T. W. Shield, R. D. James, "Breaching the work output limitation of ferromagnetic shape memory alloys", *Appl. Phys. Lett.* **93,** 122509 (2008).

29. E. Ben-David, O. Y. Kanner, and **D. Shilo**, "A new method for measuring displacements of micro devices by an optical encoding system", *Experimental Mechanics* **49**, 823 (2009).

30. Y. Ganor, **D. Shilo**, N. Zarrouati[4], R. D. James, "Ferromagnetic Shape Memory Flapper", *Sensors and Actuators: A Physical* **150**, 277-279 (2009).

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* Students underlined

1 Students of Professors Ravichandran and Bhattacharya

2 Research assistant of Dr. Shilo

3 Contributed the CuAlNi samples

4 Students of Professors James and Shield

5 Lecturer for Thermodynamics in the Materials Engineering Department of the Technion

6 Research Associate in our department; was responsible for finite element analysis

7 Student of Prof. E. Gutmanas and Dr. I Gotman.

31. E. Zolotoyabko and **D. Shilo**, "Comment on Interaction of a surface wave with a dislocation", *Phys. Rev. B* **80**, 136101 (2009).

32. S. Vollach and **D. Shilo**, "The Mechanical Response of Shape Memory Alloys under a Rapid Heating Pulse", *Experimental Mechanics* **50**, 803-811 (2010).

33. E. Faran and **D. Shilo**, "Twin Motion Faster than the Speed of Sound", ***Phys. Rev. Lett.*** **104**, 155501 (2010).

34. H. Drezner, **D. Shilo**, A. Dorogoy[6] and E. Zolotoyabko, "Nano-scale mapping of elastic modules in biogenic composites: the nacre of mollusk shells", *Advanced Functional Materials* **20**, 2723-2728 (2010).

35. I. Zlotnikov[7], A. Dorogoy[6], **D. Shilo**, I. Gotman and E. Gutmanas, "Nanoindentation, Modeling and Toughening Effects of Zirconia/Organic Nanolaminates", *Advanced Engineering Materials*, **12**, 935-941 (2010).

36. E. Faran and **D. Shilo**, "The kinetic relation for twin wall motion in NiMnGa", ***J. Mech. Phys. Solids*** **59**, 975-987 (2011).

37. E. Faran and **D. Shilo**, "Implications of twinning kinetics on the frequency response in NiMnGa actuators", *Appl. Phys. Lett.* **100**, 151901 (2012).

38. E. Faran and **D. Shilo**, "The kinetic relation for twin wall motion in NiMnGa – part 2", ***J. Mech. Phys. Solids*** **61**, 726-741 (2013).

39. I. Benichou [8], E. Faran, **D. Shilo** and S. Givli, "Application of a novel bi-stable chain model for the analysis of jerky twin boundary motion in NiMnGa", *Appl. Phys. Lett.* **102**, 011912 (2013).

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Students underlined.

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57. Y. Marom†, S. Goldman[16], E. Shalev[15] and **D. Shilo**, "Characterization of irreversible physio-mechanical processes in stretched fetal membranes", 1*6th European Mechanics of Materials Conference,* Nantes, France, (2018).

58. E. Faran†, I. Benichou, S. Givli and **D. Shilo**, "What is the physical origin for the twinning stress in Ni-Mn-Ga?", *International Conference on Ferromagnetic Shape Memory Alloys, ICFSMA 2019,* Prague, Czech Republic (2019).

59. N. Zreihan, E. Faran and **D. Shilo**†, "The Effect of Loading Rate on Characteristics of Twin Boundary Motion in Ni-Mn-Ga", *International Conference on Ferromagnetic Shape Memory Alloys, ICFSMA 2019,* Prague, Czech Republic (2019).

60. E. Faran† and **D. Shilo**, "Kinetic laws for the motion of twin boundaries in ferroic materials: the role of twinning disconnections", *Dislocations 2019,* Haifa, Israel (2019).

61. E. Bronstein†, E. Faran and **D. Shilo**, "Analysis of austenite-martensite phase boundary and twinned microstructure in shape memory alloys: The role of twinning disconnections", *Dislocations 2019,* Haifa, Israel (2019).

62. E. Bronstein†, E. Faran and **D. Shilo**, "Analysis of austenite-martensite phase boundary and twinned microstructure in shape memory alloys: The role of twinning disconnections", *Virtual Annual Meeting of the Society of Engineering Science (SES2020).*

63. **D. Shilo**† and E. Faran, "Multi-scale Dynamics of Twinning in Ferroic Materials", *Virtual Annual Meeting of the Society of Engineering Science (SES2020).*

64. E. Bronstein†, L. Z. Tóth, L. Daróczi, D. L. Beke, R. Talmon, and **D. Shilo**, "Tracking twin boundary jerky motion at nanometer and microsecond scales", *Annual Meeting of the Society of Engineering Science (SES),* Texas A&M University (2022).

65. A. Dana†, E. Bronstein, E. Faran, V. Honkimaki, K.D. Liss, and **D. Shilo**. "Towards Understanding the Evolution of the Martensitic Transformation in Shape Memory Alloys: a Novel High-Energy Synchrotron Study", *Annual Meeting of the Society of Engineering Science (SES),* Texas A&M University (2022).

66. N. Zreihan, E. Faran, E. Bronstein, E. Vives, A. Planes, and **D. Shilo**†, "Investigation of avalanche phenomena by simultaneous measurements of different variables", *Annual Meeting of the Society of Engineering Science (SES),* Texas A&M University (2022).

Special Organizational Activities in Conferences:

2020 Guest Editor of a Special Issue on *Structure and Motion of Material Interfaces* in Shape Memory and Superelasticity.

2020 Organizing a session on *Structure and Motion of Material Interfaces* in the Virtual Annual Meeting of the Society of Engineering Science (SES2020).

2013 Organizing a session on *Mechanics of Phase Transforming and Multifunctional Materials* in the Annual Meeting of the Society of Engineering Science (SES2013), Brown University, USA, together with Kaushik Dayal (Carnegie Mellon) and Liping Liu (Rutgers).

2012 Organizing a session on *Shape Memory and Smart Materials* in the Israeli Conference on Mechanical Engineering (ICME 32), Tel Aviv, Israel.

2012 Organizing a session on *Mechanical Behavior of Advanced Materials* in the Israeli Conference on Mechanical Engineering (ICME 32), Tel Aviv, Israel.

2008 Organizing a session on *Smart Materials and Actuation* in the ASME Engineering Systems Design and Analysis Conference (ESDA 2008), Haifa, Israel, 2008.

2006 Organizing a short workshop on Nano-mechanical Measurements and hosting it at the Department of Mechanical Engineering, Technion.

Seminar talks:

University of California at Santa Barbara, Department of Mechanical and Environmental Engineering, "Dynamics and Interactions of Crystal Defects", 2004.
Technion – Israel Institute of Technology, Faculty of Mechanical Engineering, "Mechanics of materials in the nm and μm scales", 2004.
Ben-Gurion University, Department of Mechanical Engineering, "Mechanics of materials in the nm and μm scales", 2005.

Technion – Israel Institute of Technology, Nanomechanical Testing Seminar (over 50 participants from Israeli academic and industrial institutions), “Advanced Nanomechanical Characterization Techniques” , 2006.
Tel-Aviv University, Faculty of Engineering, “Investigation of mechanical properties at the nm-scale”, 2006.

Technion – Israel Institute of Technology, Faculty of Materials Engineering, “Investigation of Twin Wall Properties at the Nanometer Scale”, 2006.

MIT, Department of Mechanical Engineering, MMEC seminar series, “Investigation of Twin-Wall Properties at the Nanometer Scale”, 2008.

University of Minnesota, Department of Aerospace Engineering and Mechanics, Colloquium (Departmental seminar), “Investigation of Twin-Wall Properties at the Nanometer Scale”, 2008.

Tel-Aviv University, School of Mechanical Engineering, “Investigation of interface properties at the nanometer scale”, 2009.

Caltech, GALCIT Colloquium Seminar, "Multiscale experimental study of twinning transformation in ferroelastic and ferroelectric materials", 2010.

Max Planck Institute of Colloids and Interfaces, Germany, Department of Biomaterials, "Study of biogenic composites by nano-scale elastic modulus mapping", 2011.

General Motors, Warren, USA, "High strain rate electrical actuation of shape memory alloy wires", 2011.

General Motors, Warren, USA, "High strain rate electrical actuation of shape memory alloy wires", 2012.

Boise State University, Department of Materials Engineering, "Dynamics of twinning processes in active materials", 2012.

University of Dortmund, Department of Mechanical Engineering, “Multi-scale dynamics of non-180^{o} domain switching processes in ferroic materials”, 2013.

University of Duisburg-Essen, Research Seminar on Mechanics, “Multi-scale dynamics of non-180^{o} domain switching processes in ferroic materials”, 2013.

General Motors, Warren, USA, "High strain rate electrical actuation of shape memory alloy wires", 2013.

John Hopkins University, Department of Mechanical Engineering, “Multi-scale dynamics of twinning in ferroic materials”, 2014.