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Professor Noam Eliaz – Curriculum Vitae

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Education

- 2018 Course: Board of Directors & Corporate Senior Executives, Lahav Executive Education, Collier School of Management, Tel-Aviv University (TAU).
- 1995-1999 Ph.D. in Materials Engineering (direct-track program), Ben-Gurion University of the Negev (BGU, *summa cum laude*).
Doctoral dissertation: Hydrogen interaction with amorphous and quasicrystalline alloys.
Honors: Eshkol Scholarship for Scientific Infrastructures (The Israel Ministry of Science) & BGU's Provost Prize (given once a year to one outstanding Ph.D. student in the whole University).
- 1996-1998 M.B.A., BGU (*magna cum laude*).
- 1988-1991 B.Sc. in Materials Engineering (Academic Reserve), BGU (*magna cum laude*).
Engineering project: Modeling hydrogen diffusion and trapping around helium bubbles in First-Wall materials in nuclear reactors.
Honors: Best departmental engineering project.

Academic and Professional Experience

- 2001– **Tel-Aviv University.**
School of Mechanical Engineering (formerly: Department of Solid Mechanics, Materials and Systems): Senior Lecturer 1/10/2001-30/6/2008 (tenure awarded 1/4/2006); Associate Professor 1/7/2008-30/4/2012; (Full) Professor 1/5/2012-31/7/2013.
Department of Materials Science and Engineering. Founding Chair since 1/8/2013. (Full) Professor.
- 2019–present **Vellore Institute of Technology (VIT)**, Tamil Nadu, India.
Adjunct Professor.
- 8/2012-
7/2013 **Northwestern University** (IL, USA).
Eshbach Visiting Professor (on sabbatical leave), Department of Materials Science and Engineering. Hosts: Professors David N. Seidman and David C. Dunand.
- Autumn 2005 **Tokyo Medical and Dental University** (Tokyo, Japan).
JSPS Visiting Professor, Institute of Biomaterials and Bioengineering.
- Summer
2002 **MIT** (MA, USA).
Visiting Scientist, H.H. Uhlig Corrosion Lab, Department of Materials Science and Engineering.

- 1999-2001 **MIT** (MA, USA).
Postdoctoral Fulbright and Rothschild Fellow, H.H. Uhlig Corrosion Lab,
Department of Materials Science and Engineering. Advisor: Prof. Ronald M.
Latanision.
- 1992-1995 **Israel Air Force** (IAF).
Metallurgical Laboratory officer (currently holds the rank Major in reserve).

Responsibilities

- 2017-2018 A member of the Nominations Committee of the Faculty of Engineering.
- 2014-2018 A representative of the Faculty of Engineering in the Small Senate of TAU
(elected).
- 2013-2017 Founding Chair, [Department of Materials Science and Engineering](#), Tel-Aviv
University.
- 2009-2011 Founding Head, Materials and Nanotechnologies Program (for MSc and PhD
studies), Tel-Aviv University,
- 2006-2009 Coordinator in the Faculty of Engineering, Materials Science and Engineering
Program (MSc studies), Tel-Aviv University.
- 2005-2017 Editor-in-Chief of *Corrosion Reviews*.
- 2017- Editorial Board, *Corrosion Reviews*.
- 2017- Editorial Board, *Bioceramics Development and Applications*.
- 2017- Editorial Board, *Materials*.
- 2017- Editorial Board, *Current Topics in Electrochemistry*.
- 03/2017- A member of the followup committee of the “State of Science in Israel” (following
05/2018 [the 2nd report](#) of The Israel Academy of Sciences and Humanities from 2016),
appointment by the President of the Academy.
- 03/2016- An academic member of the Board of Governors annual meeting (elected by the
03/2018 Senate of TAU).
- 2010-2017 A member of the Academic Council of the [Azrieli College of Engineering
Jerusalem](#).
- 2015-2017 Member of the review committee for Israeli postdoctoral scholars in sciences and
engineering, [Fulbright Post-Doctoral Fellowships program](#).
- 09/2017- National delegate, [International Corrosion Council](#) (ICC)
2023
- 2014-2016 Israel Regional Representative (elected), International Society of Electrochemistry
(ISE).
- 2012-2014 Chairman – TEG 186X committee on Environmentally Assisted Cracking, NACE
International.
- 2008-2011 Chairman – Central Committee 300 for Chemistry Standards, The Standards
Institution of Israel.
- 2003-2005 Chairman, The Israel Section of NACE International.

Honors (selected list)

- 2019- Adjunct Professor, [Vellore Institute of Technology \(VIT\)](#), Tamil Nadu, India.
- 2015- Elected Member, [The Israel Young Academy](#) (IYA).
[Technical Achievement Award](#), NACE International.
Citation: “For outstanding achievements in corrosion research, engineering and education, with key contributions in electrodeposition of special materials, biomaterials corrosion, and failure analysis in the aircraft, space, medical device, nuclear power generation, and naval industries” (the only Israeli recipient of this honor so far).
- 2014 Eshbach Visiting Scholar, McCormick School of Engineering and Applied Science, NU.
- 2013 This program supports “short visits of distinguished visitors from industry or academia to the McCormick School (1-2 scholars are appointed each year).”
- 2012 [NACE Fellow](#), NACE International (the only Israeli Fellow so far).
Two projects to which Eliaz contributed were selected as having the 2nd and 3rd highest impact on the Israel Air Force among all engineering projects carried out in the materials area during 60 years. These projects were the use of ferrography in condition monitoring and failure analysis of F-16 engines, respectively.
- 2010 [Herbert H. Uhlig Award](#), NACE International (the first Israeli to receive this or any other NACE International award).
- 2010 Fellow, The Japanese Society for the Promotion of Science (JSPS).
- 2005-2007 T.P. Hoar Award for the best paper published in the journal *Corrosion Science* during 2001.
The Institute of Corrosion and Pergamon.
- 2003 [Dan David scholarship](#) for young researchers (TAU).
- 2002 Fulbright and Rothschild postdoctoral fellowships (the only materials engineer to receive both).
- 1999

Research Interests

Prof. Eliaz's research is interdisciplinary and combines basic scientific research with applied research and development. Examples include: (1) Additive manufacturing (AM), either from powders or from electrolyte solutions; (2) Development of novel electrochemically-deposited hydroxyapatite coatings for orthopedic and dental implants; (3) The use of Bio-Ferrography for diagnosing osteoarthritis or cancer, determining the efficacy of drug treatments, and monitoring the wear of artificial joints; (4) Study of corrosion in different environments (from aircraft, space and nuclear reactors to the human body); (5) Development of functional electrochemical coatings (e.g. rhenium coatings that are resistant at high temperatures and in aggressive environments for aircraft, aerospace and catalysis applications); and (6) Failure analysis. The products of his research are being used in defense organizations and implant companies. Being the Chief Scientist of [SGS Dental Implant](#), he has led a process of scaling-up a hydroxyapatite coating that he developed at TAU.

Prof. Noam Eliaz – Selected Publications

- 5) N. Eliaz, D. Fuks and D. Eliezer, “A New Model for the Diffusion Behavior of Hydrogen in Metallic Glasses,” *Acta Mater.*, **47**(10) (1999) 2981-2989.
- 8) N. Eliaz, E. Moshe, S. Eliezer and D. Eliezer, “Hydrogen Effects on the Spall Strength and Fracture Characteristics of Amorphous Fe-Si-B Alloy at Very High Strain Rates,” *Metall. Mater. Trans. A*, **31**(4) (2000) 1085-1093.
- 9) N. Eliaz, D. Eliezer, E. Abramov, D. Zander and U. Köster, “Hydrogen Evolution from Zr-based Amorphous and Quasicrystalline Alloys,” *J. Alloys Compd.*, **305**(1-2) (2000) 272-281.
- 16) S.-B. Hong, N. Eliaz, E.M. Sachs, S.M. Allen and R.M. Latanision, “Corrosion Behavior of Advanced Ti-Based Alloys Made by Three-Dimensional Printing (3DP™) for Biomedical Applications,” *Corros. Sci.*, **43**(9) (2001) 1781-1791.
- 17) S.-B. Hong, N. Eliaz, G.G. Leisk, E.M. Sachs, R.M. Latanision and S.M. Allen, “A New Ti-5Ag Alloy for Customized Prostheses by Three-Dimensional Printing (3DP™),” *J. Dent. Res.*, **80**(3) (2001) 860-863.
- 30) N. Eliaz, L. Banks-Sills, **D. Ashkenazi**[‡] and R. Eliasi, “Modeling Failure of Metallic Glasses Due to Hydrogen Embrittlement in the Absence of External Loads,” *Acta Mater.*, **52**(1) (2004) 93-105.
- 31) S. Eliezer, N. Eliaz, E. Grossman, D. Fisher, I. Gouzman, Z. Henis, S. Pecker, Y. Horovitz, M. Fraenkel, S. Maman and Y. Lereah, “Synthesis of Nanoparticles with Femtosecond Laser Pulses,” *Phys. Rev. B*, **69**(14) (2004) 144119-1 – 144119-6.
- 32) **R. Verker**[‡], N. Eliaz, I. Gouzman, S. Eliezer, M. Fraenkel, S. Maman, F. Beckmann, K. Pranzas and E. Grossman, “The Effect of Simulated Hypervelocity Space Debris on Polymers,” *Acta Mater.*, **52**(19) (2004) 5539-5549.
- 36) N. Eliaz, **T.M. Sridhar**[‡] and E. Gileadi, “Synthesis and Characterization of Nickel Tungsten Alloys by Electrodeposition,” *Electrochim. Acta*, **50**(14) (2005) 2893-2904.
- 41) N. Eliaz and **M. Eliyahu**[‡], “Electrochemical Processes of Nucleation and Growth of Hydroxyapatite on Titanium Supported by Real-Time Electrochemical Atomic Force Microscopy,” *J. Biomed. Mater. Res. Part A*, **80**(3) (2007) 621-634.
- 42) N. Eliaz and **O. Nissan**[‡], “Innovative Processes for Electropolishing of Medical Devices Made of Stainless Steels,” *J. Biomed. Mater. Res. Part A*, **83**(2) (2007) 546-557.
- 46) N. Eliaz and **T.M. Sridhar**[‡], “Electrocrystallization of Hydroxyapatite and its Dependence on Solution Conditions,” *Cryst. Gr. Des.*, **8**(11) (2008) 3965-3977.

- 48) **E. Kossoy**,[‡] Y. Khoptiar, C. Cytermann, G. Shemesh, H. Katz, H. Sheinkopf, I. Cohen and **N. Eliaz**, “The Use of SIMS in Quality Control and Failure Analysis of Electrodeposited Items Inspected for Hydrogen Effects,” *Corros. Sci.*, **50**(5) (2008) 1481-1491.
- 54) **R. Verker**,[‡] E. Grossman and **N. Eliaz**, “Erosion of POSS-Polyimide Films under Hypervelocity Impact and Atomic Oxygen: The Role of Mechanical Properties at Elevated Temperatures,” *Acta Mater.*, **57**(4) (2009) 1112-1119.
- 58) **A. Naor**,[‡] **N. Eliaz** and E. Gileadi, “Electrodeposition of Rhenium-Nickel Alloys from Aqueous Solutions,” *Electrochim. Acta*, **54**(25) (2009) 6028-6035.
- 59) **N. Eliaz**, **W. Kopelovitch**,[‡] L. Burstein, E. Kobayashi and T. Hanawa, “Electrochemical Processes of Nucleation and Growth of Calcium Phosphate on Titanium Supported by Real-Time Quartz Crystal Microbalance Measurements and X-Ray Photoelectron Spectroscopy Analysis,” *J. Biomed. Mater. Res. Part A*, **89**(1) (2009) 270-280.
- 60) **D. Lakstein**,[‡] **W. Kopelovitch**,[‡] Z. Barkay, M. Bahaa, D. Hendel and **N. Eliaz**, “Enhanced Osseointegration of Grit-Blasted, NaOH-Treated and Electrochemically Hydroxyapatite-Coated Ti-6Al-4V Implants in Rabbits,” *Acta Biomater.*, **5**(6) (2009) 2258-2269.
- 63) **K. Mendel**,[‡] **N. Eliaz**, I. Benhar, D. Hendel and N. Halperin, “Magnetic Isolation of Particles Suspended in Synovial Fluid for Diagnostics of Natural Joint Chondropathies,” *Acta Biomater.*, **6**(11) (2010) 4430-4438.
- 65) **S. Ifergane**,[‡] Z. Barkay, O. Beerli and **N. Eliaz**, “Study of Fracture Evolution in Copper Sheets by In-Situ Tensile Test and EBSD Analysis,” *J. Mater. Sci.*, **45** (23) (2010) 6345-6352.
- 72) E. Glickman, **M. Levenshtein**,[‡] **L. Budic**[‡] and **N. Eliaz**, “Interaction of Liquid and Solid Gallium with Thin Silver Films: Synchronized Spreading and Penetration,” *Acta Mater.*, **59**(3) (2011) 914-926.
- 74) **A. Naor-Pomerantz**,[‡] **N. Eliaz** and E. Gileadi, “Electrodeposition of Rhenium-Tin Nanowires,” *Electrochim. Acta*, **56** (2011) 6361-6370.
- 75) **A. Duhin**,[‡] A. Inberg, **N. Eliaz** and E. Gileadi, “Electroless Plating of Rhenium-Nickel Alloys,” *Electrochim. Acta*, **56** (2011) 9637-9643.
- 79) **D. Lakstein**,[‡] **N. Eliaz**, **O. Levi**,[‡] D. Backstein, Y. Kosashvili, O. Safir and A.E. Gross, “Fracture of Cementless Femoral Stems at the Mid-Stem Junction in Modular Revision Hip Arthroplasty Systems,” *J. Bone Joint Surg. – Am. Vol.*, **93**(1) (2011) 57-65.
- 81) J.J. Elsner, M. Shemesh, Y. Mezape, **M. Levenshtein**,[‡] **K. Hakshur**,[‡] A. Shterling, E. Linder-Ganz and **N. Eliaz**, “Long-Term Evaluation of a Compliant Cushion Form Acetabular Bearing for Hip Joint Replacement: A 20 Million Cycles Wear Simulation,” *J. Orthop. Res.*,

29 (2011) 1859-1866.

86) O. Berkh, N. Eliaz and E. Gileadi, "The Initial Stages of Electrodeposition of Re-Ni Alloys," *J. Electrochem. Soc.*, **161**(5) (2014) D219-D226.

*** Selected by the Electrochemical Society to be its first ever open-access manuscript.

87) **N. Metoki**,[‡] L. Liu, E. Beilis, N. Eliaz and D. Mandler, "Preparation and Characterization of Alkylphosphonic Acid Self-Assembled Monolayers on Titanium Alloy by Chemisorption and Electrochemical Deposition," *Langmuir*, **30**(23) (2014) 6791-6799.

93) **T. Nusbaum**,[‡] **B.A. Rosen**,[‡] E. Gileadi and N. Eliaz, "Effect of Pulse On-Time and Peak Current Density on Pulse Plated Re-Ni Alloys," *J. Electrochem. Soc.*, **162**(7) (2015) D250-D255.

94) **O. Levi**,[‡] **B. Tal**,[‡] S. Hileli, A. Shapira, I. Benhar, P. Grabov and N. Eliaz, "Optimization of EGFR High Positive Cell Isolation Procedure by Design of Experiments Methodology," *Cytom. Part B – Clin. Cytom.*, **88** (2015) 338-347.

96) **A. Duhin**,[‡] A. Inberg, N. Eliaz and E. Gileadi, "Electroless Plating of Rhenium-Based Alloys with Nickel, Cobalt and Iron," *Electrochim. Acta*, **174** (2015) 660-666.

97) **S. Ifergane**,[‡] E. Sabatani, B. Carmeli, Z. Barkay, V. Ezersky, O. Beeri and N. Eliaz, "Hydrogen Diffusivity Measurement and Microstructural Characterization of Custom 465 Stainless Steel," *Electrochim. Acta*, **178** (2015) 494-503.

98) **B.A. Rosen**,[‡] E. Gileadi and N. Eliaz, "Electrodeposited Re-Promoted Ni Foams as a Catalyst for the Dry Reforming of Methane," *Catal. Commun.*, **76** (2016) 23-28.

99) R. Haj-Ali, R. Eliasi, V. Fourman, C. Tzur, G. Bar, E. Grossman, R. Verker, R. Gvishi, I. Gouzman and N. Eliaz, "Mechanical Characterization of Aerogel Materials with Digital Image Correlation," *Microporous Mesoporous Mater.*, **226** (2016) 44-52.

100) S.I. Baik, **A. Duhin**,[‡] P.J. Phillips, R.F. Klie, E. Gileadi, D.N. Seidman and N. Eliaz, "Atomic-Scale Structural and Chemical Study of Columnar and Multilayer Re-Ni Electrodeposited Thermal Barrier Coating," *Adv. Eng. Mater.*, **18**(7) (2016) 1133-1144.

102) **N. Metoki**,[‡] D. Mandler and N. Eliaz, "The Effect of Decorating Titanium with Different Self-Assembled Monolayers on the Electrodeposition of Calcium Phosphate," *Cryst. Gr. Des.*, **16** (2016) 2756-2764.

106) **R. Zhang**,[‡] **N. Metoki**,[‡] O. Sharabani-Yosef, H. Zhu and N. Eliaz, "Hydroxyapatite/Mesoporous Graphene/Single-Walled Carbon Nanotubes Freestanding Flexible Hybrid Membranes for Regenerative Medicine," *Adv. Funct. Mater.*, **26** (2016) 7965-7974.

*** Selected for inside front cover.

- 114) **S. Ifergane**,[‡] R. Ben David, E. Sabatani, B. Carmeli, O. Beerli and **N. Eliaz**, “Hydrogen Diffusivity and Trapping in Custom 465[®] Stainless Steel,” *J. Electrochem. Soc.*, **165**(3) (2018) C107-C115.
- 116) **N. Metoki**,[‡] S. Il-Baik, D. Isheim, D. Mandler, D.N. Seidman and **N. Eliaz**, “Atomically Resolved Calcium Phosphate Coating on a Gold Substrate,” *Nanoscale*, **10** (2018) 8451-8458.
*** Selected for inside back cover.
- 118) **H. Kazimierczak**,[‡] K. Szymkiewicz, Ł. Rogal, E. Gileadi and **N. Eliaz**, “Direct Current Electrodeposition of Zn-SiC Nanocomposite Coatings from Citrate Bath,” *J. Electrochem. Soc.*, **165**(11) (2018) D526-D535.
- 122) **N. Eliaz**, “Corrosion of Metallic Biomaterials: A Review,” *Materials*, **12**(3) (2019) 407.
*** Selected as issue cover.
- 124) I. Gouzman, E. Grossman, R. Verker, N. Atar, A. Bolker, S. Katz and **N. Eliaz**, “Advances in Polyimide-Based Materials for Space Applications,” *Adv. Mater.* (2019) 1807738.

Books

- 1) **N. Eliaz** and E. Gileadi, [Physical Electrochemistry: Fundamentals, Techniques, and Applications](#), Wiley-VCH, 2nd Edition. ISBN: 978-3-527-34139-9, 480 pages, 7 November (2018).

Book Chapters (Invited, out of 7 in total)

- 2) **N. Eliaz** and E. Gileadi, “Induced Codeposition of Alloys of Tungsten, Molybdenum and Rhenium with Transition Metals,” Chapter 4, in [Modern Aspects of Electrochemistry](#), Vol. 42, eds. C.G. Vayenas, R.E. White and M.E. Gamboa-Aldeco, Springer, New York (2008) 191-301. (NC = 39)
- 5) **N. Eliaz** and **K. Hakshur**,[‡] “Fundamentals of Tribology and the Use of Ferrography and Bio-Ferrography for Monitoring the Degradation of Natural and Artificial Joints,” in [Degradation of Implant Materials](#), ed. **N. Eliaz**, Springer, NY (2012) 253-302.
- 7) **N. Eliaz**, “Wear Particle Analysis,” in [ASM Handbook, Vol. 18: Friction, Lubrication, and Wear Technology](#), ed. G.E. Totten, ASM International, Materials Park, OH (2017) 1010-1031.
*** I am the first ever contributor to the ASM Handbook series with an Israeli affiliation.

Patents (out of 8)

- 1) **N. Eliaz**, E. Gileadi and **A. Naor**,[‡] “Rhenium Nanostructures,” US Patent 9,309,113 B2, April 12, 2016.

- 2) D. Mandler, N. Eliaz and **N. Metoki**,[‡] “Preparation of Organic Self-Assembled Monolayers either Chemisorbed or Electrochemically Prepared on Titanium alloy,” US provisional patent application 61/827,903, filed May 28, 2013.
- 6) **D. Eliyahu**,[‡] N. Eliaz and E. Gileadi, “Atomic Force Microscope-Based Meniscus-Confined Three-Dimensional Electrodeposition,” United States Provisional Patent Application No. 62/744,148, filed 11/10/2018.
- 7) R. Verker, **D. Margoy**,[‡] I. Gouzman, E. Grossman, A. Bolker and N. Eliaz, “Shape Memory Polymer Actuators,” United States Provisional Patent Application, attorney docket No. 2759MMG-USP, filed 2/1/2019.

Plenary, Keynote and Invited Presentations at International Conferences (out of 55)

- 7) N. Eliaz and E. Gileadi, “Electrochemical Deposition of Rhenium-based Alloys as Thermal Barrier Coatings,” The 6th Regional Symp. on Electrochemistry of South-East Europe (RSE-SEE 6), Balatonkenese, Hungary, June 11 – 15 (2017). **Plenary**
- 15) N. Eliaz, “Electrodeposition of Calcium Phosphates for Orthopaedic and Dental Implants,” The 215th ECS Meeting, San Francisco, CA, May 24 – 29 (2009). **Keynote**
- 20) N. Eliaz, **S. Ifergane**,[‡] Z. Barkay, R. Ben David, O. Beeri and E. Sabatani, “Hydrogen Diffusion, Trapping and Embrittlement in Structural Steels,” Int. Conf. Corrosion in the Oil & Gas Industry, Saint Petersburg, Russia, May 22 – 24 (2019). **Keynote**
- 37) N. Eliaz, **A. Naor**,[‡] **A. Duhin**,[‡] A. Inberg and E. Gileadi, “Electroplating and Electroless Deposition of Rhenium-Based Alloys,” The 8th Int. Symp. on Electrochemical Micro & Nanosystem Technologies – EMNT 2010, Cannes Mandelieu, France, September 21 – 24 (2010). **Invited**
- 47) N. Eliaz, “Master Class on Additive Manufacturing by Directed Energy Deposition with Focus on Materials,” Tempus MMATENG Meeting, Université de Lille, France, May 29 – 30 (2017). **Invited**
- 54) N. Eliaz, “Directed Energy Deposition (DED) and TAU+, the New Tel-Aviv University 3D Printing Research and Development Center,” 3D Printing & Beyond - Current and Future Trends, The Hebrew University of Jerusalem, Israel, November 7 (2018). **Invited**

DR. EYAL SABATANI - CURRICULUM VITAE

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EDUCATION

Ph.D. in Chemistry, Dept. of Materials and Interfaces, Weizmann Inst. of Science **1992**
Thesis: "Preparation and Characterization of Polyaniline Grown on top of Gold Electrodes Covered with Mono-molecular Layers of Aromatic Thiols"
Supervision: Prof. Israel Rubinstein
M.Sc. in Chemistry, Dept. of Materials and Interfaces, Weizmann Inst. of Science **1986**
Thesis: "Preparation and Characterization of Organized Mono-molecular Layers on Electrodes"
Supervision: Prof. Israel Rubinstein
B.Sc. in Chemistry, School of Chemistry, Tel Aviv University **1984**

RESEARCH EXPERIENCE OUTSIDE OF NRCN

Sabbatical Leave, Dept. of Materials and Interfaces, Weizmann Inst. of Science **2013**
Subject: Use of Nano Plasmonic Particles for Corrosion Monitoring
Sabbatical Leave, Dept. of Materials Engineering, Ben-Gurion University – Negev **2006-2007**
Subject: Chemical Sensors Based on Polydiacetylene and Porous Silicon
Post Doctorate, Division of Chemistry and Chemical Engineering, Caltech **1992-1995**
Subjects: Electron-Transfer Kinetics in the Polymer-Solution Interface
Photoluminescence of Metal Complexes inside of Polyelectrolytes

RESEARCH EXPERIENCE AT NRCN

Research Fellow, Dept. of Applied Chemistry **2010-date**
Subjects: Corrosion Science and Engineering, Materials Compatibility
Water Chemistry, Industrial Water Treatment
Membrane Separation Technology, Electro-Deionization
Electrochemical Engineering, Electro- and Electroless Deposition
Hydrogen Permeability

Head of the Dept. of Analytical Chemistry, Chemistry Division **2009-2010**

Head of the Corrosion and Electrochemistry Group, Dept. of Applied Chemistry **2000-2005 and 2007-2009**

Research Fellow, Dept. of Physical Chemistry **1995-1999**
Subjects: Electrochemistry
Radiation Chemistry

Member of Several Committees at NRCN

EWARDS AND HONORS

1. Katzir fellowship for young scientists in research institutes of the defense department.
2. Award of the COE of NRCN for an assigned engineering project 2006-2007.

Dr. Eyal Sabatani – Selected Journal Publications

1. Alexander B. Tesler, Takumi Sannomiya, Alexander Vaskevich, Eyal Sabatani and Israel Rubinstein, Sensitive Colorimetric Detection of the Early Stages of Aqueous Aluminum Corrosion Using Plasmonic Gold Nano-Island Films. *Advanced Optical Materials*, 6, 2018, 1800599.
2. Sigalit Ifergane, Roey Ben-David, Eyal Sabatani, Beni Carmeli, Ofer Beeri, and Noam Eliaz, Hydrogen diffusivity and trapping in Custom 465 stainless steel". Submitted.
3. S. Ifergane, E. Sabatani, B. Carmeli, Z. Barkay, V. Ezersky, O. Beeri, N. Eliaz, Hydrogen diffusivity measurement and microstructural characterization of Custom 465 stainless steel. *Electrochimica Acta*, 178, 2015, 494–503.
4. Eyal Sabatani, Yehoshua Kalisky, Amir Berman, Yuval Golan, Nadav Gutman, Benayahu Urbach, Amir Sa'ar, Photoluminescence of polydiacetylene membranes on porous silicon utilized for chemical sensors. *Optical Materials* 30, 2008, 1766-1774.
5. Eyal Sabatani, Hans D. Nikol, Harry B. Gray, Fred C. Anson, Emission Spectroscopy of Ru(bpy)₂dppz²⁺ in Nafion. Probing the Chemical Environment in Cast Films. *Journal of the American Chemical Society* 118, 1996, 1158-63.
6. Eyal Sabatani, Yael Gafni, Israel Rubinstein, Morphology Control in Electrochemically Grown Conducting Polymer Films. 3. A Comparative Study of Polyaniline Films on Bare Gold and on Gold Pretreated with p-Aminothiophenol. *Journal of Physical Chemistry* 99, 1995, 12305-11.
7. Eyal Sabatani, Fred C. Anson, Mediated electron transfer across Nafion-solution interfaces. Comparison with Marcus theory for cases involving Gaussian arrays of mediator couples. *Journal of Electroanalytical Chemistry* 386, 1995, 111-19.
8. Harry O. Finklea, Daniel A. Snider, John Fedyk, Eyal Sabatani, Yael Gafni, Israel Rubinstein, Characterization of octadecanethiol-coated gold electrodes as microarray electrodes by cyclic voltammetry and ac impedance spectroscopy. *Langmuir* 9, 1993, 3660-7.
9. Eyal Sabatani, Joseph Cohen-Boulakia, Merlin Bruening, Israel Rubinstein, Thioaromatic monolayers on gold: a new family of self-assembling monolayers. *Langmuir* 9, 1993, 2974-81.
10. Eyal Sabatani, Fred C. Anson, A revised model to account for the kinetics of thermodynamically disfavored electron-transfer cross-reactions at the interface between redox polymers and solutions. *Journal of Physical Chemistry* 97, 1993, 10158-65.
11. E. Sabatani, E. Ticianelli, A. Redondo, I. Rubinstein, J. Rishpon, S. Gottesfeld, Morphological effects in conducting polymer films studied by combined QCM and spectroscopic ellipsometry. *Synthetic Metals* 55, 1993, 1293-8.
12. Eyal Sabatani, Antonio Redondo, Judith Rishpon, Andrew Rudge, Israel Rubinstein, Shimshon Gottesfeld, Morphology control in electrochemically grown conducting polymer films. 2. Effects of cathodic bias on anodically grown films studied by spectroscopic ellipsometry and quartz-crystal microbalance. *Journal of the Chemical Society, Faraday Transactions* 89, 1993, 287-94.
13. Yosef Scolnik, Michael Schwartz, Eyal Sabatani, David Cahen, Room temperature mobility and diffusion coefficient of oxygen in polycrystalline yttrium barium copper oxide (YBa₂Cu₃O_{7-x}). NIST Special Publication 804 (1991), (Chem. Electron. Ceram. Mater.), 351-6.
14. Suzi Steinberg, Yitzhak Tor, Eyal Sabatani, Israel Rubinstein, Ion-selective monolayer membranes based upon self-assembling tetradentate ligand monolayers on gold electrodes. 2. Effect of applied potential on ion binding. *Journal of the American Chemical Society* 113, 1991, 5176-82.
15. Yosef Scolnik, Eyal Sabatani, David Cahen, Chemical diffusion coefficient of oxygen in polycrystalline yttrium barium copper oxide (YBa₂cu₃O_{7-x}) at room temperature. *Physica C*:

Superconductivity and Its Applications 174, 1991, 273-9.

16. Israel Rubinstein, Judith Rishpon, Eyal Sabatani, Antonio Redondo, Shimshon Gottesfeld, Morphology control in electrochemically grown conducting polymer films. 1. Precoating the metal substrate with an organic monolayer. *Journal of the American Chemical Society* 112, 1990, 6135-6.
17. Israel Rubinstein, Eyal Sabatani, Judith Rishpon, Electrochemical impedance analysis of polyaniline films on electrodes. *Journal of the Electrochemical Society* 134, 1987, 3078-83.
18. Eyal Sabatani, Israel Rubinstein, Organized self-assembling monolayers on electrodes. 2. Monolayer-based ultramicroelectrodes for the study of very rapid electrode kinetics. *Journal of Physical Chemistry* 91, 1987, 6663-9.
19. Eyal Sabatani, Israel Rubinstein, Rivka Maoz, Jacob Sagiv, Organized self-assembling monolayers on electrodes. Part I. Octadecyl derivatives on gold. *Journal of Electroanalytical Chemistry and Interfacial Electrochemistry* 219, 1987, 365-71.

CURRICULUM VITAE

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Education

- 2012 Ph.D., Nuclear Engineering, Ben-Gurion University of the Negev, Israel.
Thesis subject:
Fate of short-lived isotopes in perovskite ceramic nuclear waste forms
Supervisors: Prof. Moshe Mintz, Prof. Roni Shneck, Prof. Giora Kimmel, Ben-Gurion University of the Negev, Israel
and
Prof. Alexandra Navrotsky, University of California at Davis, Davis, USA.
- 1995 M.Sc., Materials Engineering, Ben-Gurion University of the Negev, Israel.
Thesis subject:
Preparation and characterization of SiC matrix composites by chemical vapor infiltration (CVI)
Supervisors: Dr. David Itzhak , Ben-Gurion University of the Negev, Israel and Dr. Mordechai Dariel, Nuclear Research Center-Negev, Israel.
- 1991 B.Sc., Materials Engineering, Ben-Gurion University of the Negev, Israel.

Employment

- 2018 - present Metal Forming group, Materials Processing Laboratory,
Department of Materials, NRCN, Israel
- 2017- 2018 Visiting Scientist – Department of Materials Science and
Engineering, Tel-Aviv University, Tel-Aviv, Israel
and

- CVs with Lists of Publications of the three PIs -

	Research Fellow – Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel.
2012 - 2017	Head - Materials Processing Laboratory, Department of Materials, NRCN, Israel
2009 - 2012	Head - Metal Forming group, Materials Processing Laboratory, Department of Materials, NRCN, Israel
2008 - 2009	Thermal Treatments and Casting group, Materials Processing Laboratory, Department of Materials, NRCN, Israel
2007 - 2008	Visiting Scientist – Peter A. Rock Thermochemistry Laboratory and NEAT ORU, University of California at Davis, Davis, USA
2006 - 2007	Head - High Temperatures group, Applied Chemistry Section, Department of Chemistry, NRCN, Israel
2002 - 2005	Applied Chemistry Section, Department of Chemistry, NRCN, Israel
2001 - 2002	Visiting Scientist – Department of Mechanical and Aerospace Engineering, School of Engineering and Applied Science, The George Washington University, USA, in collaboration with the Plasma Processing Section of the Surface Modification Branch, Materials Division, Naval Research Laboratories (NRL), USA
1992- 2001	Applied Chemistry Section, Department of Chemistry, NRCN, Israel

Main fields of interest

High temperature processes, metal forming, thermochemistry, ceramics, perovskites, calorimetry, molten salts chemistry/ electrochemistry, film deposition, metal matrix composites, hydrogenation in additive manufactured materials.

Other Activities

2018 - 2019

Co-advisor of Mr. Yonatan Tennenbaum's B.Sc. project in Department of Materials Science and Engineering, Tel-Aviv University, Tel-Aviv, Israel, "Comparative metallurgical study of microstructural effect on the interaction and permeation of electrochemically charged hydrogen into wrought and additive manufactured Ti-6Al-4V alloys".

Co-advisor of Mr. Shoham Ben Shushan and Mr. Ben Zion Landau B.Sc. project in Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel, "Establishment and characterization of two-directional compression system for metal powder densification".
Research Fellow at the Center of Thermo-Mechanics and Failure of Materials, Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel.

2017

Co-advisor of Mr. Gal Abotbul and Mr. Oron Blumenfeld B.Sc. project in Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel, "Development of Powder Densification System for Hydraulic Press".

Research Fellow at the Center of Thermo-Mechanics and Failure of Materials, Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel.

Panel member in the final B.Sc. project review - Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel.

2015

Reviewer of Mr. Tomer Mordechai's M.Sc. thesis, Department of Material Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel, "Effects of Treatment Duration and Cooling Rate on Pure Aluminum Solidification upon Pulse Magneto-Oscillation Treatment".

2014 - 2015

Co-advisor of Mr. Almog Biton's and Mr. Moshe Bracha's B.Sc. project in Department of Mechanical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel, "Design and Validation of a Forward Extrusion System with Controlled Product Quenching" (in Hebrew).

2012 - 2015

Co-advisor of Mr. Ziv Ungarish's M.Sc. thesis, Department of Nuclear Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel, "A Study of the Interface Between Mg Alloys and Al Clad for Understanding the Cladding Process by Extrusion" (in Hebrew).

- CVs with Lists of Publications of the three PIs -

- 2009 Chair of Materials for Energy Applications session in the 13th *International IUPAC Conference on High Temperature Materials Chemistry-HTMC-13*, September 15 -18, 2009, University of California at Davis, Davis CA, USA.
- 2007 Co-advisor of Mr. Mark Taieb's B.Sc. project in Department of Chemical Engineering, Shamoon College of Engineering, Beer-Sheva, Israel, "Feasibility Test of TiO₂ Reduction to Ti by Ca in Molten CaCl₂" (in Hebrew).
- Awards**
- 2017 NRCN Director - Excellence award for outstanding research for year 2016
- 1999 IAEC Director - Excellence award for outstanding R&D for year 1998
- 1992 Annual Conference of the Israeli Association for Crystal Growth, the Weizmann Institute of Science, 1992 – Excellence award for outstanding poster

Dr. Nissim Navi - List of Publications

Selected Journal Articles

1. B. Mitleman, E. Priel and **N.U. Navi**, "A finite element study of thermo-mechanical fields and their relation to friction conditions in Al1050 ring compression tests", *J. Manuf. Mater. Process*, doi:10.3390/jmmp2040083, 2018.
2. E. Priel, Z. Ungarish and **N.U. Navi**, "Co-extrusion of a Mg/Al Composite Billet: A Computational Study Validated by Experiments", *J. Mater. Proc. Tech.*, **236** 103-13, 2016.
3. **N.U. Navi**, G. Kimmel, G. Yardeni, J. Zabicky, R.Z. Shneck, M.H. Mintz and A. Navrotsky, "Zirconium Incorporation into CaTiO₃ Perovskite Prepared from Xerogels and Implication for the Fate of (Ca,Sr)TiO₃ Nuclear Waste Ceramics", *J. Am. Ceram. Soc.*, **96** [8] 2644-50, 2013.
4. **N.U. Navi**, R.Z. Shneck, T.Y. Shvareva, G. Kimmel, J. Zabicky, M.H. Mintz and A. Navrotsky, "Thermochemistry of (Ca_xSr_{1-x})TiO₃, (Ba_xSr_{1-x})TiO₃ and (Ba_xCa_{1-x})TiO₃ Perovskite Solid Solutions", *J. Am. Ceram. Soc.*, **95** [5] 1717-26, 2012.
5. **N.U. Navi**, G. Kimmel, J. Zabicky, S. V. Ushakov, R.Z. Shneck, M.H. Mintz and A. Navrotsky, "Yttrium Substitution in MTiO₃ (M = Ca, Sr, Ba and Ca + Sr + Ba) Perovskites and Implication for Incorporation of Fission Products into Ceramic Waste Forms", *J. Am. Ceram. Soc.*, **94** [9] 3112-16, 2011.
6. **N. Navi**, J.S. Horwitz, R.C.Y Auyeung, S.B. Qadri, H.-D. Wu, "Microwave Dielectric Properties of W-Doped Ba_{0.6}Sr_{0.4}TiO₃ Thin Films Grown on (001) MgO by Pulsed Laser Deposition with Variable Oxygen Deposition Pressure", *Thin Solid Films*, **510**, 115-8, 2006.
7. **N. Navi**, H. Kim, J.S. Horwitz, H.-D. Wu and S.B. Qadri, "Anisotropic In-Plane Strain in W-Doped (Ba,Sr)TiO₃ Thin Films Deposited by Pulsed Laser Deposition on (001) MgO", *Appl. Phys. A*, **76**, 841-6, 2003.
8. **N. Navi**, J.S. Horwitz, H.-D. Wu and S.B. Qadri, "Structure-Property Relationships in W-Doped (Ba,Sr)TiO₃ Thin Films Deposited by Pulsed Laser Deposition on (001) MgO", *Mater. Res. Soc. Symp. Proc.*, **720**, 41-8, 2002.
9. D. Potrepka, S. Tidrow, A. Tauber, K. Kirchner, B. Rod, J.S. Horwitz, W. Chang, **N. Navi**, and D. Bubb, "Studies of Thin Films Ferroelectrics with Charge-Compensated Substitutions in BST", *Mater. Res. Soc. Symp. Proc.*, **720**, 175-8, 2002.