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Education

Ph.D. Metallurgical Engineering&Materials Science. U. of Nevada Reno, Reno NV
M.Sc. Atomic & Molecular Physics, University of Nevada Reno, Reno NV
M.Sc. Thin Films Physics-Ellipsometry, University of Cumhuriyet, Sivas Turkey
B.Sc. Physics. University of Cumhuriyet, Sivas Turkey

Experience

2020- Present: **Professor:** *Sivas Science and Technology University Aviation and Space Sciences Faculty, Department of Space Engineering, Sivas.* Conducting research and giving lecture courses on topics such as Optical Thin Films, Materials science, Corrosion, Nondestructive Testing. Implementing routine obligations and tasks as a member of several administrative councils of the Faculty and the Engineering Faculty. Took an administrative role for the Dean of the faculty as a deputy for more than a year. Guiding graduate and undergraduate level students on their seminars, graduation projects, and thesis work.

2012-2019: **Associate Professor:** *Yalova University, Department of Chemical and Process Enginering*. Conducting research in the fields of physics, materials science, and corrosion, and teaching lecture and laboratory courses on closely related topics. Implementing routine obligations and tasks as a member of several administrative councils of the Engineering Faculty. Guiding graduate and undergraduate level students on their seminars, graduation projects, and thesis work.

2010-2012: **Assistant Professor:** *Yalova University, Departmentof Chemical and Process Enginering*. After the approval of the Department Program (CPE) by YÖK in 2009, acted as the assistant chair for the department . Instructed engineering courses of various levels for the department and other engineering programs of the faculty. Taught and guided graduate and undergraduate level students on their seminars, graduation projects, and thesis studies. Worked on founding processes of research laboratories belonging to the faculty by following product exhibition seminars of various companies, product evaluation and selection meetings, and purchasing of selected tools, devices, and experimental set-ups.

2009: Performed a voluntary work to add a new bachelors and a masters degree program (Chemical and Process Enginering (CPE)) to the Engineering Faculty of the newly established public university (University of Yalova, Turkey). Took initiative in founding processes of the Department of Chemical and Process Enginering. Prepared proposals, documents, and reports regarding the program's content and objectives, and submitted them to the Higher Educational Council (YÖK) for evaluation and approval.

2007-2008: **Post Doctoral Research Associate**. *University of Nevada, Reno Department of Metallurgical Engineering and Materials Science.* Worked on a research project regarding storage of hydrogen via metal hydrides and environmental degradation of the storage materials. Set-up vapor pressure measurement devices for the hydrogen storage materials and instructed graduate and undergraduate students on the related tasks. Gained further experience on failure analysis, stress corrosion cracking, and hydrogen embrittlement of carbon steels and Ni-Cr based Alloys. Wrote reports and papers for DOE data base.

2005-2007:**Materials Scientist/Engineer**. *Westar Aerospace Defense Group, and Morgan Research Inc-*

Marshall Space Center-Redstone Arsenal Aviation Engineering Command, Structural and Materials Division, Huntsville AL. Analyzed materials and processes used in the maintenance and overhaul of rotary wing aircraft assemblies and parts. Reviewed amendments to US Army Aviation Depot Maintenance Work Requirements (DMWR) for critical and non-critical flight safety items from a materials engineering point of view. Evaluated materials and process proposals submitted by the Environmental Logistics Oversite Office, and wrote recommendations for Aviation Engineering Directorate (AED) superiors via technical memorandums of reply with pertinent substantiations. Reviewed US Army Depot conformance inspection reports, Analytical Investigation Division Reports, Source Approval Reports, and Redstone Technical Test Center failure analysis results. Achieved experience with the materials and processes such as corrosion preventive compounds, primers, cleaning compounds, surface anodizing and chemical conversion coating, environmental degradation of metals, hydrogen embrittlement, stress corrosion cracking, localized corrosion, fatigue, surface crack inspection of composites and metals by fluorescent penetrants and magnetic particles. Worked within the AED Task Tracking System of assigning work and disseminating technical replies.

2003-2005:**Materials Scientist.** *Johnson Controls Inc.-Lawrence Livermore National Laboratory, Energy and Environment Division.* **DOE and YMP:** Designed and built electrochemical cells, and conducted experiments for electrochemical corrosion performance of high level nuclear waste package materials in simulated aqueous conditions. Took and analyzed electrochemical data in the general and localized corrosion fields for metallic package materials. Performed metallographic analysis and scanning electron microscopy on nickel-based alloys before and after tests. Maintained scientific notebooks and supplemental volumes covering experimental details as part of a stringent quality assurance program. Documented results via formal and informal reports and presentations. Wrote and edited papers for scientific journals and conferences out of the obtained experimental results.

2001-2003:**Graduate Research Assistant**. *University of Nevada, Reno- Department of Metallurgical and Materials sci&eng, Reno, NV*. **Department of Energy (DOE), Yucca Mountain high level nuclear waste repository project (YMP):** Designed, set-up, and conducted hydrogen embrittlement, stress corrosion cracking susceptibility, and electrochemical corrosion performance experiments on various metallic alloys in the simulated nuclear waste repository conditions. Designed and built experimental set-ups for measuring-detecting hydrogen permeation, hydrogen trapping, and diffusion parameters of metals. Determined hydrogen and strain aging embrittlement of low and medium carbon steels using slow strain rate tests in simulated repository conditions. Submitted final reports to DOE on hydrogen permeation and embrittlement, stress corrosion cracking susceptibility, and strain aging embrittlement of carbon steels. **Intel Incorporation project:** Heat absorbing plastic crystal phase change materials; studied chemical vapor condensation techniques of heat absorbing plastic crystals in vacuum. Characterized electrical and thermal properties of polyalcohol nano-crystalline materials. **Micro-metallic encapsulation of phase change materials.** Fabricated particles of solid-solid phase change materials for reversible thermal energy storage.

1999- 2000**:Consultant&Employee.** *Xistor, Reno NV.* **Network attached data storage systems:** Designed and built data storage system hardware. Designed circuit board canister out of sheet metal, surface mounted electronic circuit boards, performed electronic testing and mechanical assembling.

1995-1998**:Research&Student Assistant.** *University of Nevada, Reno- Department of Physics.* **Cross-beam experiments:** Designed and built hemispherical electron spectrometer and power source for ion-beam steering in the vacuum. Designed vacuum chamber and magnetic shield for laser ion cross-beam experiments. Took and analyzed data on angular distribution and energy of recoil electrons of negative ion beams (La-, C-) detached by laser. Tutored and graded undergraduate students.

1992-1994**:Teaching Assistant.** *Cumhuriyet University of Sivas, Turkey*. Taught physics courses and laboratories in electromagnetism, optics, and mechanics and designed and set-up optical and mechanical experiments for 400-level undergraduate students. Prepared and published supplementary laboratory material

for the related courses.

1990-1992**:Research Assistant.** *Cumhuriyet University of Sivas, Turkey*. **Optical Thin films &Ellipsometry:** Performed research on optical properties of multi-layer film systems. Deposited thin films by thermal evaporation of various metals and dielectrics on to glass and quartz substrates in vacuum. Studied chemical and physical vapor deposition methods. Built a benchtop null ellipsometer. Determined single thin metal and dielectric film parameters and thickness by ellipsometric measurements. Determined thick film thickness using interferometers. Developed computer codes for simultaneous calculation of optical parameters (such as real and imaginary parts of refractive index (*n* and *k*), and film thicknesses) of multi-layer thin film stacks using measured ellipsometric parameters (Psi and Delta).

Additional Information

Received a **Full time government scholarship** for Masters Degree Education in Physics in the US, by a nationwide competitive selection exam in Turkey in 1994. Received '**The outstanding PhD Student Award of 2001**" from the Dean of Mackay School of Mines of U. of Nevada, Reno. **Hands on, detail oriented, management of multiple tasks, mechanically inclined, creative, able to design, build and modify tools, devices and experimental set-ups.** Ellipsometry, Interferometry, X-rays, Spectroscopy, Microscopy (SEM, TEM, AFM, Optical), Metallography, Designing, Machining, Fabrication, Fortran, C++, Mathematica, Pro/E, Corel Draw, and all basic Windows applications.

Hobbies

Interested in classical art forms such as music, architecture, and calligraphy. Appreciates both Turkish and European Art Music from Renaissance to the late 18th Century, Turkish Folk Music of the same period, classical and contemporary jazz, and some experimental music and art forms**.** Builds musical instruments such as violins and classical (Istanbul) kemenches. Plays the violin and some other strings.

Selected Publications

A.Yilmaz, Length of dislocations during band formation of irregular plastic flow, *Materials Letters Volume 273, 15 August 2020, 127871*

A.Yilmaz, Surface Potential correlations with irregular plastic deformation, *DEU Fen ve Muhendislik Dergisi, 2018, DOI Numarası (DOI Number): 10.21205/deufmd. 2018205925*

A.Yilmaz, Pitting inhibition in fiber dyeing solutions by two oxyanions**,** *Anti Corrosion Methods and Materials*, 64 (2017) 170-177.

A.Yilmaz, The Portevin-Le Chatelier effect with surface potential**,** *Journal of Alloys and Compounds***,** 699 (2016) 436-441.

A.Yilmaz, On Environmental Degradation of Carbon Steels in Simulated Ground Waters, oral presentation, Euromat 2013 Materials Science Congress, Sept 7-14, 2013 Sevilla, Spain.

A.Yilmaz, The Portevin–Le Chatelier effect: a review of experimental findings, *Sci. Technol. Adv. Mater.* 12 (2011) 063001 (16pp)

A.Yilmaz, Characterization of MnS films deposited by the spray pyrolysis method, *Physica Scripta*, 83 (2011) 045603

A.Yilmaz, Temperature and surface potential correlations with serrated flow of low carbon steel, *J. Mater. Sci.*, 46(2011)3766-3776

A.Yilmaz, D. Chandra, and R.B. Rebak, Corrosion Behavior of Carbon Steel Rock Bolt in Simulated Yucca Mountain Ground Waters, *Metallurgical and Materials Transactions A*, 36A(2005)1097-1105

Kenneth Evans, Ahmet Yilmaz, Daniel S. Day, Lana L. Wong, John C. Estill, and Raul B. Rebak, Using Electrochemical Methods to Determine Alloy 22's Crevice Corrosion Repassivation Potential. *Journal of Metals*, January (2005)56-61

Vinay Deodeshmukh, A Venugopal, Dhanesh Chandra, Ahmet Yilmaz, Jack Daemen, Denny A Jones, Alan S Lea, Mark H Engelhard, X-ray Photoelectron Spectroscopic Analyses of Corrosion Products Formed on Rock Bolt Carbon Steel in Chloride Media with Bicarbonate and Silicate Ions. *Corrosion Science,* 46(2004)2629-2649

Yilmaz A, Fix David, Estill JC, Rebak RB. Correlation between two types of surface stress mitigation and the resistance to corrosion of Alloy 22. Book Series: PRESSURE VESSEL AND PIPING DIVISION OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS Volume: 7 Pages: 503-509, 2005. *doi: 10.1115/PVP2005-71175,* ISBN: 0-7918-4192-8 | eISBN: 0-7918-3763-7

Yilmaz A, Pasupathi P, Rebak RB. Stifling of crevice corrosion in alloy 22 during constant potential tests. Book Series: PRESSURE VESSEL AND PIPING DIVISION OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS Volume: 7 Pages: 493-502, 2005. *doi: 10.1115/PVP2005-71174,* ISBN: 0-7918-4192-8 | eISBN: 0-7918-3763-7, ISBN: 0-7918-4192-8 | eISBN: 0-7918-3763-7

G.O.Ilevbare, R. A. Etien, J. C. Estill, A.Yilmaz, G. A. Hust, M. L. Stuart, R. B. Rebak. Anodic behavior of Alloy 22 in High Nitrate Brines at Temperatures Higher than 100 Celcius. Pressure Vessels & Piping Division of ASME Volume 7: Operations, Applications, and Components, Pages: 591-600, 2006, doi:*10.1115/PVP2006-ICPVT-11-93423,* ISBN: 0-7918-4758-6 | eISBN: 0-7918-3782-3

David V. Fix, Ahmet Yilmaz, Lana L. Wong, John C. Estill, Raúl B. Rebak. Effect of Surface Stress Mitigation on the Corrosion Behavior of Alloy 22; Conference: Presented at: CORROSION/2005 and NACE Expo, Houston, TX (US), 04/03/2005--04/07/2005

Ahmet Yilmaz, Dhanesh Chandra, Jaak Daemen, Denny A. Jones, Venugopal Arjunan, Vinay Deodeshmukh, Temperature and Ionic Concentration Effects on Corrosion Behavior of Medium Carbon Steels in Yucca Mountain Waters; TMS 2002, Fall Meeting, Columbus Ohio, US

Vinay Deodeshmukh, Venugopal Arjunan, Dhanesh Chandra, Jaak Daemen, Denny A. Jones, Ahmet Yilmaz, Environmental Effects on Hydrogen Permeation in Low Carbon Steel Sets Proposed for the Yucca Mountain Repository; TMS 2002, Fall Meeting, Columbus Ohio, US.

A.Yilmaz, D. Callabrese, A. Cowington, J.Thompson; Electron Affinity Measurements of Negative Ions C^- and La^-; EPSCoR Annual Physics Meeting, Tonopah, Nevada US 1996 (Poster Presentation)

Ahmet Yilmaz and Nevzat Kavcar; Determination of the optical Constants of In, Ag, and CuO Thin Films using Ellipsometric Methods; Cumhuriyet Universitesi, Fen Bilimleri Dergisi, 15(1993)127-134.

Ahmet Yilmaz, Nevzat Kavcar; In, Ag ve CuO ince film optik sabitlerinin elipsometrik yöntemle belirlenmesi; TFD 13. Ulusal Fizik Kongresi, Program ve Bildiri Özetleri, p.130, Sep30-Oct2 1992, Anadolu University, Eskisehir TR