

3303 Beckman Institute
University of Illinois
405 N Mathews Ave
Urbana, IL 61801

Phone: (515) 708-6410
Email: capraz@illinois.edu
website: www.ocapraz.com
Google Scholar , Linkedn

Education

Iowa State University	Ames, IA
Doctor of Philosophy , Chemical and Biochemical Engineering	Dec. 2014
Minor, Mechanical Engineering	GPA 3.74/4.00
Middle East Technical University	Ankara, Turkey
Bachelor of Science , Chemical Engineering	June 2010
	GPA:3.42/4.00

Research and Work Experience

University of Illinois at Urbana-Champaign	Urbana, IL
Postdoctoral Research Assistant, Advisors: Nancy Sottos and Scott White	Jan. 2015 - now

- Characterize chemo-mechanical deformations in Li-ion battery electrodes.
- Develop a continuum based mathematical model for Li-ion and solid-state electrolyte batteries.
- Fabricate advanced electrode materials for electrochemical energy storage.
- Train and mentor four graduate students.
- Collaborate with researchers from *Argonne National Lab., the University of Illinois, Northwestern University and Purdue University.*

Iowa State University	Ames, IA
Graduate Research Assistant, Advisors: Kurt Hebert and Pranav Shrotriya	Aug. 2010 – Dec. 2014

- Developed a new high-resolution curvature interferometry technique for in situ stress measurements in thin films.
- Investigated the surface instability of aluminum during stress corrosion cracking.
- Investigated mass transport and stress-generating mechanisms during the formation of anodic oxide films.
- Developed a mathematical model for the coupling between defect chemistry and stress in oxide films.
- Trained and mentored two graduate students and one visitor scientist.
- Collaborated with researchers from *the National Institute of Standards and Technology, the University of Manchester and Universite Catholique de Louvain.*

Skills and Techniques

Experimental Skills

- **In situ Mechanical Analysis:** Digital Image Correlations, Curvature Measurements and Phase-Shifting Optical Interferometry
- **Electrochemical Analysis:** Galvanostatic and Voltammetric Cycling, Cyclic Voltammetry, Impedance Spectroscopy, Linear Polarization and Quartz Crystal Microbalance
- **Surface and Structure Characterization:** Atomic Force Microscopy, Scanning Electron Microscopy, Energy-Dispersive X-ray Spectroscopy, Transmission Electron Microscopy, Powder X-ray Diffraction, UV/Vis Spectroscopy and Thermo Gravimetric Analysis
- **Others:** Sputtered Deposition and 3-D Printing

Computer Skills

- **Programming Languages:** Fortran, Matlab, and Mathematica
- **Graphical Languages:** Labview, SolidWorks, HYSIS, ChemCAD, AutoCAD, and MatCAD
- **Office Softwares:** Latex and Microsoft Office

Languages

- English (Professional), Turkish (Mother Language) and German (Beginner)

Activities and Affiliations

Mentoring	Mentoring 4 graduate students at the University of Illinois Mentored 2 Ph.D. students and 1 visitor scientist at Iowa State University	Jan. 2015 - now 2011-2014
Service	Recycling Batteries Committee Member at the University of Illinois Session Organizer, “Fracture and Fatigue” and “Mechanics and Energetic Materials”, Society of Experimental Mechanics International Congress Reviewer, <i>Electrochimica Acta</i> , <i>Journal of Electrochemical Society</i> , <i>Experimental Mechanics</i> Secretary, Chemical Engineering Graduate Student Organization Lab. Manager, Iowa State University (2010-2014)	since 2017 June 2017 2014 - now 2011-2013
Professional Membership	The Electrochemical Society, Society of Experimental Mechanics International Society of Electrochemistry and Society of Engineering Science	2011-now
Social Responsibilities	Volunteered in Beckman Open House Turkish Student Association of Iowa State University (vice-president) Volunteering for Winter Weatherization in Ames, Iowa	2013, 2015 2013-2014 2011-2014

Selected Publications (5 of 10, full list is available on www.ocapraz.com)

- Ö. Ö. Çapraz, Q. van Overmeere, P. Shrotriya and K. R. Hebert, Stress Induced by Electrolyte Anion Incorporation in Porous Anodic Aluminum Oxide, *Electrochim. Acta*, 238, 368, 2017, Link
- Ö. Ö. Çapraz, K. L. Bassett, A.A. Gewirth and N.R. Sottos, Electrochemical Stiffness Changes in Lithium Manganese Oxide Electrodes, *Adv. Energy Mater.*, 1601778, 2016, Link
- E.M.C. Jones, Ö. Ö. Çapraz, S.R. White and N.R. Sottos, Reversible and irreversible deformation mechanisms of composite graphite electrodes in lithium-ion batteries, *J. Electrochem. Soc.*, 163, 9, 2016, Link
- Ö. Ö. Çapraz, P. Shrotriya and K. R. Hebert, Tensile stress and plastic deformation in aluminum induced by vacancy diffusion during corrosion, *Acta Materialia*, 115, 434, 2016, Link
- Ö. Ö. Çapraz, P. Skeldon, G. Thompson, P. Shrotriya and K. R. Hebert, Role of Oxide Stress in the Initial Growth of Self-Organized Porous Aluminum Oxide, *J. Electrochim. Soc.*, 167, 404, 2015, Editor Choice, Link

Selected Presentations (3 of 11, full list is available on www.ocapraz.com)

The Society of Engineering Science , Northeastern University, Boston, MA <i>In situ Strain Measurements of Gold-Coated Lithium Manganese Oxide Electrode for Li-Ion Batteries</i>	July 2017
The Society of Experimental Mechanics , Indianapolis, IN <i>Mechanical Deformations During Electrochemical Cycling of Lithium Manganese Oxide Electrodes</i>	June 2017
Invited Speaker at Auburn University , Auburn, AL <i>Chemo-Mechanical Phenomena in Advanced Materials for Energy-related Applications</i>	March 2017

Proposal Contributions

March 2017	Shell Energy , <i>Interfacial Control for Self-Stabilizing Solid State Batteries.</i>
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Honors and Awards

2013-2014	Preparing Future Faculty (PFF) Scholar Rank, Iowa State University
2013	PAG (Professional Advancement Grant) Award, Iowa State University
2011-2014	Electrochemical Society Awarded Student Membership
2006, 2008, 2010	High Honor Student, Middle East Technical University
2007, 2009	Honor Student, Middle East Technical University