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## I. Earned Degrees

### **Ph.D., Mechanical Engineering**

Massachusetts Institute of Technology, Cambridge, MA, 2015.  
Advisor: Lallit Anand

### **S.M., Mechanical Engineering**

Massachusetts Institute of Technology, Cambridge, MA, 2012.  
Advisor: Lallit Anand

### **B.S., Mechanical Engineering**

Massachusetts Institute of Technology, Cambridge, MA, 2010.

## II. Employment History

### **Assistant Professor**

School of Aerospace Engineering  
Georgia Institute of Technology, Atlanta, GA, Nov 2016 - Present.

### **Postdoctoral Fellow**

School of Aerospace Engineering  
Georgia Institute of Technology, Atlanta, GA, Aug 2015 - Nov 2017.  
Advisor: Julian J. Rimoli

### **Graduate Research Assistant**

Department of Mechanical Engineering  
Massachusetts Institute of Technology, Cambridge, MA, Jan 2010 - Jun 2015.

## III. Honors and Awards

### **A. International or National Awards**

#### **Selected for the National Academy of Engineering US Frontiers of Engineering Symposium**

One of eighty-three invited early-career engineers selected for this meeting to discuss cutting-edge research in a variety of engineering disciplines. Irvine, CA, 2021.

#### **Robert L. Lichten Award**

For the presentation "Ground and Flight Tests of a Cable-Driven Four-Bar Linkage Robotic Landing Gear for Rotorcraft". Bestowed to the PI's student, Benjamin León, by the Vertical Flight Society at the annual meeting, May 2019.

#### **Graduate Student Best Paper Award**

For the presentation *Coupled diffusion-deformation of phase-separating materials*. Bestowed by ASME and SES at the joint SES annual technical meeting and ASME-AMD annual summer meeting, July 2013.

#### **Den Hartog Travel award in Mechanics**

Awarded for travel to present at the ASME IMECE 2013 conference.

## B. Institute or School Awards

### 2021 CTL/BP Junior Faculty Teaching Excellence Award

*Georgia Institute of Technology*

For excellence in teaching and educational innovation.

### 2011 Wunsch Foundation Silent Hoist and Crane Award

*Massachusetts Institute of Technology*

Outstanding Teaching Assistant for the class Mechanics and Materials II.

### 2008 AMP Inc.

*Massachusetts Institute of Technology*

Award for outstanding performance in Mechanics and Materials II.

## IV. Research, Scholarship, and Creative Activities

\* Denotes work published while at Georgia Tech. Students of the PI are bolded and blue.

### A. Published Books, Book Chapters, and Edited Volumes

No Data

### B. Refereed Publications and Submitted Articles

#### B1. Published and Accepted Journal Articles

- [18] \* **Afshar, A.**, **Di Leo, C.V.**, 2021. A Thermodynamically Consistent Gradient Theory for Diffusion-Reaction-Deformation in Solids: Application to Conversion-Type Electrodes. *Journal of The Mechanics and Physics of Solids*, 151, p.104368.1-37.
- [17] \* **Bistri, D.**, **Di Leo, C.V.**, 2021. Modeling of chemo-mechanical multi-particle interactions in composite electrodes for Liquid and Solid-State Li-Ion Batteries. *Journal of The Electrochemical Society*, 168(3), p.030515.1-23.
- [16] \* **León, B.**, Rimoli, J.J, **Di Leo, C.V.**, 2021. Rotorcraft Dynamic Platform Landings Using Robotic Landing Gear *Journal of Dynamic Systems, Measurement and Control*, 143(11), p.111006.1-111006.19.
- [15] \* **León, B.**, Rimoli, J.J, **Di Leo, C.V.**, 2021. Ground and Flight Tests of a Cable-Driven, Four-Bar Linkage Robotic Landing Gear for Rotorcraft *Journal of the American Helicopter Society.*, 66, p.042003.1-042003.10.
- [14] \* **Bistri, D.**, **Afshar, A.**, **Di Leo, C.V.**, 2020. Modeling the chemo-mechanical behavior of all-solid-state batteries: a review. *Meccanica*, 56(6), pp.1523-1554.
- [13] \* Xiaoxing, X., **Afshar, A.**, Yang, H., Portela, C.M., Kochmann, D.M., **Di Leo, C.V.**, Greer, J., 2019. Electrochemically Reconfigurable Architected Materials. *Nature*, 573(7773), p.205-213.
- [12] \* Tippens, J., Miers, J., **Afshar, A.**, Lewis, J., Cortes, F.J.Q., Qiao, H., Marchese, T.S., **Di Leo, C.V.**, Saldana, C., McDowell, M.T., 2019. Visualizing Chemo-Mechanical Degradation of a Solid-State Battery Electrolyte. *ACS Energy Letters*, 4(6), p.1475-1483.

- [11] \* **Di Leo, C.V.** and Rimoli, J.J., 2019. New perspectives on the grain-size dependent yield strength of polycrystalline metals *Scripta Materialia*, 166, p.149-153.
- [10] \* **León, B.**, Rimoli, J.J., **Di Leo, C.V.**, 2019. Elastomer Encapsulated Pressure Sensors with Engineered Air Cavities for Ground Contact Sensing. *IEEE Sensors*, 19(16), p.6628-6643.
- [9] \* **Di Leo, C.V.**, **León, B.**, Wachlin, J., **Kurien, M.**, A. Krishnan, A. Krishnan, Rimoli, J.J, Costello, M., 2019. Design of a Crashworthy Cable-Driven Four-Bar Link Robotic Landing Gear System. *Journal of Aircraft*, 57(2), p.224-244.
- [8] \* Nadkarni, N., Rejovitsky, E., Fraggedakis, D., **Di Leo, C.V.** Smith, R.B., Bai, P., Bazant, M.Z., 2018. Interplay of phase boundary anisotropy and electro-auto-catalytic surface reactions on the lithium intercalation dynamics in  $\text{Li}_x\text{FePO}_4$  plateletlike nanoparticles. *Physical Review Materials*, 2(8), p.085406.1-085406.13.
- [7] \* Xiaoxing, X., **Di Leo, C.V.**, Gu, X.W., Lozano, A., Greer, J., 2016. In Situ Lithiation-Delithiation of Mechanically Robust Cu-Si Core-Shell Nanolattices in a Scanning Electron Microscope. *ACS Energy Letters*, 1(3), p.492-499.
- [6] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L., 2015. Diffusion-deformation theory for amorphous silicon anodes: the role of plastic deformation on electrochemical performance. *International Journal of Solids and Structures*, 67-68, p.283-296.
- [5] Rejovitzky, E., **Di Leo, C.V.**, and Anand, L., 2014. A theory and a simulation capability for the growth of a solid electrolyte interphase layer at an anode particle in a Li-ion battery. *Journal of the Mechanics and Physics of Solids*, 78, p.210-230.
- [4] Chester, S.A., **Di Leo, C.V.**, and Anand, L., 2014. A finite element implementation of a coupled diffusion-deformation theory for elastomeric gels. *International Journal of Solids and Structures*, 52, p.1-18.
- [3] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L., 2014. A Cahn-Hilliard-type phase-field theory for species diffusion coupled with large elastic deformations: application to phase-separating Li-ion electrode materials. *Journal of the Mechanics and Physics of Solids*, 70, p.1-29.
- [2] **Di Leo, C.V.**, Luk-Cyr, J., Liu, H., Loeffel, K., Al-Athel, K., and Anand, L., 2014. A new methodology for characterizing traction-separation relations for interfacial delamination of thermal barrier coatings. *Acta Materialia*, 71, p.306-318.
- [1] **Di Leo, C.V.**, and Anand, L., 2013. Hydrogen in metals: A coupled theory for species diffusion and large elastic-plastic deformations. *International Journal of Plasticity*, 43, p.42-69.

## B2. Conference Presentation with Proceedings (Refereed)

- [4] \* **Leon, B.**, Rimoli, J.J, **Di Leo, C.V.**. Ground and Flight Tests of a Cable-Driven, Four-Bar Linkage Robotic Landing Gear for Rotorcraft. *75th Vertical Flight Society (VFS) Annual Forum*, May, 2020. **Winner: Lichten Best Paper Award.**
- [3] \* **Di Leo, C.V.**, **Leon, B.**, Wachlin, J., **Kurien, M.**, Rimoli, J. J., Costello, M. Cable-Driven Four-Bar Link Robotic Landing Gear Mechanism: Rapid Design and Survivability Testing. *In 2018 AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, p. 0491, 2018.

[2] Bhattacharyya, R., **Di Leo, C.V.**, Floerkemeier, C., Sarma, S., and Anand, L. RFID tag antenna based temperature sensing using shape memory polymer actuation. In *Sensors, 2010 IEEE*, 2363-2368, 2010.

[1] Chester, S.A., Srivastava, V., **Di Leo, C.V.**, and Anand, L. A large-deformation theory for thermally-actuated shape-memory polymers and its application. In *ASME 2010 IMECE*, 677-683., 2010.

### **B3. Other Refereed Material**

No Data

### **B4. Submitted Journal Articles**

No Data

## **C. Other Publications and Creative Products**

### **C1. Software**

[1] Released a series of fortran user subroutines for the commercial finite element package Abaqus/Standard to enable performance of fully-coupled chemo-mechanical simulations. The package included instructional materials and demonstrations. This was released as part of the publication Chester et al. *IJSS*, 52, 1-18, 2014.

### **C2. Patents**

#### **C2.a. Patents Awarded**

[3] \* **Di Leo, C.V.**, Costello, M.F., **León, B.**, Rimoli, J.J., (Filed October 2017) Sensing Devices and Methods of Using Same US Patent App. 16/585,162. **Notice of Allowance Issued.**

[2] Prest, C.D., and **Di Leo, C.V.** (December, 2009). "Compact media player." US Patent 9,961,792.

[1] Prest, C.D., **Di Leo, C.V.**, and Mino, J. (July, 2009). "Accessory controller for electronic devices." US Patent 9,064,653

#### **C2.b. Patent Applications**

[2] \* **Di Leo, C.V.**, Costello, M.F., **León, B.**, Rimoli, J.J., Ward, M.B., (Filed September 2017) Cable-Driven Four-Bar Link Leg Mechanism. US Patent App. 16/645,370.

[1] \* Rimoli J.J., **Di Leo, C.V.**, Gebara, C. and Lavirgen, J., (Filed December, 2015). Articulated joint mechanism for cable-based and tensegrity structures. US Patent App. 16/065,613.

## **D. Presentations**

### **D1. Invited Conference and Workshop Presentations**

[3] Phase-field theories for the chemo-mechanics of diffusion-reaction systems.  
Prager Medal Symposium to honor Prof. Lallit Anand  
*Society of Engineering Sciences, 55th Annual technical Meeting*, Madrid, Spain. October, 2018.

- [2] Modeling nano-architected electrodes with elastic instabilities: The role of buckling on electrochemical performance. Symposium: Mechanics and Electrochemistry of Energy Materials *Society of Engineering Sciences, 55th Annual technical Meeting*, Madrid, Spain. October, 2018.
- [1] Electro-chemo-mechanical meta-materials for energy storage *ARO Workshop on Meta-structures: Dynamics, Topology and Related Opportunities*. Atlanta, GA. May 2018.

## D2. Conference and Workshop Presentations

- [15] \* **Di Leo, C.V.**, **Afshar, A.** (August, 2021) A Thermodynamically Consistent Phase-Field Theory for Coupled Deformation-Diffusion-Reactions in Solids: Application to Conversion-Type Electrodes *25th International Congress of Theoretical and Applied Mechanics*, Virtual Conference.
- [14] \* **Afshar, A.**, **Di Leo, C.V.** (September, 2020) A Thermodynamically Consistent Theory for Deformation-Diffusion-Reaction in Solids: Applications to Conversion-Type Electrodes. *SES Annual Technical Meeting*, Virtual Conference.
- [13] \* **Afshar, A.**, **Di Leo, C.V.** (October, 2019). A Thermodynamically Consistent Gradient Theory for Deformation-Diffusion-Reaction in Solids. *SES Annual Technical Meeting*, St. Louis, MI.
- [12] \* **Bistri, D.**, **Di Leo, C.V.** (October, 2019). Non-linear kinetics interface element for modeling multi-particle behavior in Li-ion electrodes. *SES Annual Technical Meeting*, St. Louis, MI.
- [11] \* **Di Leo, C.V.**, **Afshar, A.**, Xia, X., Greer, J.R. (November 2018) Modeling nano-architected electrodes with elastic instabilities: The role of buckling on electrochemical performance *ASME IMECE*, Pittsburgh, PA.
- [10] \* **Di Leo, C.V.**, **León, B.**, Wachlin, J., **Kurien, M.**, Rimoli, J.J, Costello, M. (January 2018) Cable-Driven Four-Bar Link Robotic Landing Gear (RLG) Mechanism: Rapid Design and Survivability Testing. *AIAA SciTech*, Kissimmee, FL.
- [9] \* **Di Leo, C.V.**, Xia, X., Greer, J.R. (July, 2017). Chemo-mechanics of Cu-Si nanolattice electrodes. *SES Annual Technical Meeting*, Boston, MA.
- [8] **Di Leo, C.V.**, Rejovitzky, E., Anand, L. (August, 2016). Chemo-mechanics theory for amorphous silicon electrodes *International Congress of Theoretical and Applied Mechanics*, Montreal, Canada.
- [7] **Di Leo, C.V.**, Waston, S., and Anand, L. (November, 2015). Experimental characterization of a coupled deformation-diffusion theory for elastomeric materials. *ASME IMECE*, Houston, TX.
- [6] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L. (November, 2015). Diffusion-deformation theory for amorphous Silicon anodes: the role of plastic deformation on electrochemical performance. *ASME IMECE*, Houston, TX.
- [5] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L. (October, 2015). Diffusion-deformation theory for amorphous Silicon anodes: the role of plastic deformation on electrochemical performance. *SES Annual Technical Meeting*, College Station, TX.
- [4] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L. (June, 2014). Coupled diffusion-deformations in phase-separating materials. *US National Congress of Theoretical and Applied Mechanics*, East Lansing, MI.

- [3] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L. (November, 2013). A Cahn-Hillard-type phase-field theory for species diffusion coupled with large elastic deformations. *ASME International Mechanical Engineering Congress and Exposition*, San Diego, CA.
- [2] **Di Leo, C.V.**, Rejovitzky, E., and Anand, L. (July, 2013). Coupled diffusion-deformation of phase-separating materials. *SES Annual Technical Meeting and ASME-AMD Annual Summer Meeting*, Providence, RI
- [1] **Di Leo, C.V.**, and Anand, L. (November, 2012). Hydrogen in metals: A coupled theory for diffusion and large elastic-plastic deformations. *ASME International Mechanical Engineering Congress and Exposition*, Houston, TX.

### **D3. Invited Seminar Presentations**

- [7] Chemo-Mechanics of Next Generation Electrodes: Nano-Architected Lattices and Sharp-Interface Reaction Conversion Electrodes.  
*Mechanical Engineering - Engineering Mechanics, Michigan Technological University*. October, 2019.
- [6] Continuum chemo-mechanics of energy storage materials. Focus on nano-architected electrodes.  
*Karlsruhe Institut für Technologie*. October, 2018.
- [5] Continuum chemo-mechanics of energy materials.  
*Mechanical Engineering, University of Houston*. March, 2016.
- [4] Chemo-mechanics of Li-Ion battery electrodes.  
*Materials Science and Engineering, Texas A&M University*. March, 2015.
- [3] Multi-physics continuum modeling of materials.  
*Aerospace Engineering, Georgia Tech*. March, 2015.
- [2] Computational modeling of Silicon anodes.  
*Civil Engineering and Engineering Mechanics, Columbia University*. February, 2015.
- [1] Computational modeling of Silicon anodes.  
*Mechanical and Industrial Engineering Department, New Jersey Institute of Technology*. November, 2014.

## **E. Grants and Contracts**

### **E1. As Principal Investigator**

- 7. Title of Project: Army SBIR Phase I. Articulated Landing Gear for Class IV UAS  
Agency/Company: Earthly Dynamics. Army STTR Phase I  
Total Dollar Amount: \$17,633  
Role: PI  
Collaborators: None  
Period of Contract: 8/1/2021 – 1/31/2022  
Candidate's Share: 100%



6. Title of Project: Air Force STTR Phase I. Robotic Landing Gear for Emerging eVTOL and Urban Air Mobility Systems  
Agency/Company: Earthly Dynamics.  
Total Dollar Amount: \$53,501  
Role: PI  
Collaborators: Graeme Kennedy (co-PI)  
Period of Contract: 01/2021 – 06/2021  
Candidate's Share: 50% (\$26,750)
5. Title of Project: Modeling of nano-architected electrodes with elastic instabilities: The role of buckling on electrochemical performance.  
Agency/Company: National Science Foundation  
Total Dollar Amount: \$314,045  
Role: PI  
Collaborators: None  
Period of Contract: 09/2018 – 08/2021  
Candidate's Share: 100%
4. Title of Project: Augmented and Virtual Reality Toolbox for Structural Analysis Education  
Agency/Company: Georgia Tech GT-FIRE: Funding Innovation in Research and Education Annual Awards  
Total Dollar Amount: \$ 39,690  
Role: PI  
Collaborators: Julian J. Rimoli (co-PI)  
Period of Contract: 05/2018 – 06/2019  
Candidate's Share: 50% (\$19,845)
3. Title of Project: DURIP: Optical characterization of the dynamic mechanical response of advanced aerospace materials and structures.  
Agency/Company: Army Research Office  
Total Dollar Amount: \$188,530  
Role: PI  
Collaborators: Massimo Ruzzene (co-PI), Julian J. Rimoli (co-PI)  
Period of Contract: 05/2018 – 06/2019  
Candidate's Share: 100%
2. Title of Project: Ground and Flight Support for the S100 Robotic Landing Gear Program.  
Agency/Company: Boeing/Mesa, AZ  
Total Dollar Amount: \$ 75,743  
Role: PI  
Collaborators: None  
Period of Contract: 05/2018 – 07/2018  
Candidate's Share: 100%
1. Title of Project: 3D Printing of Recycled Plastics.  
Agency/Company: Georgia Tech, Serve Learn Sustain  
Total Dollar Amount: \$ 3,500  
Role: PI  
Collaborators: None  
Period of Contract: 05/2017 – 07/2017

Candidate's Share: 100%

## E2. As Co-Principal Investigator

3. Title of Project: Coupling Models and Operando Experiments to Describe Evolution and Degradation of Solid-State Batteries  
Agency/Company: NASA  
Total Dollar Amount: \$750,000  
Role: co-PI  
Collaborators: Matthew T. McDowell (GT, PI), Thomas F. Fuller (GT, co-PI)  
Period of Contract: 4/19/2021 - 4/18/2024  
Candidate's Share: ~ 33% (\$250,000)
2. Title of Project: Experimentally Validated Numerical Framework for Understanding and Predicting Microstructural Effects on Environment-Induced Cracking of Al-Mg Alloys.  
Agency/Company: The United States Air Force Academy (USAFA), Center for Aircraft Structural Life Extension (CAStLE).  
Total Dollar Amount: \$400,000  
Role: co-PI  
Collaborators: Josh Kacher (PI)  
Period of Contract: 09/2019 – 08/2023  
Candidate's Share: ~ 75% (\$297,795)
1. Title of Project: Robotic Landing Gear For Rotorcraft  
Agency/Company: Air Force/DARPA  
Total Dollar Amount: \$2,344,301  
Role: temporary PI due to leave of M. Costello  
Collaborators: Mark F. Costello (PI,GT), Julian J. Rimoli (co-PI,GT)  
Period of Contract: 09/2012 – 04/2018  
Candidate's Share: ~\$150,000.

## E3. As Senior Personnel or Contributor

2. Title of Project: Transforming Engineering Education Through Story-driven Learning: Helping Students See Themselves as Engineers Who Take Action to Create Value.  
Agency/Company: Robert D. and Patricia E. Kern Family Foundation.  
Total Dollar Amount: \$3,100,000  
Role: Senior Personnel  
Collaborators: J. LeDoux (PI, GT), P. Benkeser (co-PI, GT), A. Amekudzi-Kennedy (co-PI, GT), R. Sivakumar (co-PI, GT), M. Costello (co-PI, GT).  
Period of Contract: 03/2021 – 02/2024  
Candidate's Share: ~\$285,000.

1. Title of Project: VAST-XP: Virtual Aero Surface Technology X Plane.  
 Agency/Company: DoD/Defense Advanced Research Projects Agency (DARPA). Dr Alexander Walan.  
 Total Dollar Amount: \$6,602,325  
 Role: Senior Personnel  
 Collaborators: M. Costello (PI, GT), Ari Glezer (co-PI, GT), Dimitri Mavris (co-PI, GT)  
 Period of Contract: 09/2019 – 07/2021  
 Candidate's Share: ~\$200,000

#### E4. Pending Proposals

3. Status: **Awarded**. In Contracting Phase  
 Title of Project: Air Force STTR Phase II. Robotic Landing Gear for Emerging eVTOL and Urban Air Mobility Systems  
 Agency/Company: Earthly Dynamics.  
 Total Dollar Amount: \$225,000  
 Role: PI  
 Collaborators: Graeme Kennedy (co-PI)  
 Period of Contract: 10/1/2021 - 9/30/2022  
 Candidate's Share: 50% (\$112,500)
2. Status: *Submitted*  
 Title of Project: CAREER: Continuum electro-chemo-mechanics phase-field modeling of all-solid-state energy storage  
 Agency/Company: National Science Foundation  
 Agency/Company: National Science Foundation  
 Total Dollar Amount: \$608,513  
 Role: PI  
 Collaborators: None  
 Period of Contract: 8/1/2022 - 7/31/2027  
 Candidate's Share: 100%
1. Status: *Submitted*  
 Title of Project: Asymmetrical Reconfigurable Interphases for Electrochemical Systems (ARIES)  
 Agency/Company: DARPA  
 Total Dollar Amount: \$16,000,000  
 Role: co-PI  
 Collaborators: Shirley Meng (PI, UC San Diego), Jian Luo (co-PI, UC San Diego), Raphael Clement (co-PI, UC Santa Barbara), Feng Lin (co-PI, Virginia Polytechnic), Yang Shao-Horn (co-PI, MIT), Yue Qi (co-PI, Brown), Long Qing Chen (co-PI, Penn State), Ming Tang (co-PI, Rice), Joel Kirner (Storageenergy).  
 Period of Contract: 3/1/2022 - 2/28/2026  
 Candidate's Share: \$1,027,010

#### F. Other Scholarly and Creative Accomplishments

No Data

**G. Societal and Policy Impacts**

No Data

**H. Other Professional Activities**

No Data

**V. Education****A. Courses Taught**

	<b>Semester, Year</b>	<b>Course Number</b>	<b>Course Title</b>	<b>Enrolled Students</b>
17	Spring, 2021	AE 6115	Fund. of Aerospace Structural Analysis	17
16	Fall, 2020	AE 2610	Intr. to Exp. Methods in Aerospace	111
15	Fall, 2020	AE 3610	Experimental Fluid and Solid Mechanics	109
14	Summer, 2020	AE 2610	Intr. to Exp. Methods in Aerospace	28
13	Spring, 2020	AE 6115	Fund. of Aerospace Structural Analysis	26
12	Spring, 2020	AE 2610	Intr. to Exp. Methods in Aerospace	108
11	Spring, 2020	AE 3610	Experimental Fluid and Solid Mechanics	112
10	Summer, 2019	AE 3140	Structural Analysis	40
9	Spring, 2019	AE 3140	Structural Analysis	66
8	Spring, 2019	AE 2610	Intr. to Exp. Methods in Aerospace	115
7	Spring, 2019	AE 3610	Experimental Fluid and Solid Mechanics	103
6	Summer, 2018	AE 3140	Structural Analysis	33
5	Fall, 2017	AE 3140	Structural Analysis	77
4	Fall, 2017	AE 2610	Intr. to Exp. Methods in Aerospace	109
3	Fall, 2017	AE 3610	Experimental Fluid and Solid Mechanics	93
2	Spring, 2017	AE 2610	Intr. to Exp. Methods in Aerospace	98
1	Spring, 2017	AE 3610	Experimental Fluid and Solid Mechanics	84

**B. Individual Student Guidance****B1. Ph.D. Students****B.1.a - Graduated**

## 2. Arman Afshar

Date of Graduation: May 2021

Thesis Title: Aspects of Continuum Chemo-Mechanics Phenomena in Solids: Applications to Energy Storage Materials.

Current Position: Engineering at Apple.

## 1. Benjamin Leon

Date of Graduation: May 2020

Thesis Title: Enabling Technologies for Autonomous Landing with Robotic Landing Gear.

Current Position: Research Engineering at Earthly Dynamics.

**B.1.b - In Process**

## 4. Donald Bistri

Start Date: August 2017

Degree(s) sought: M.S in AE, M.S. in ME, Ph.D. AE

Progression: Passed qualifying exam.

Research topic: Chemo-Mechanics of all-solid-state energy storage.

## 3. Jamshid Farbiborz

Start Date: August 2018

Degree: Ph.D. in AE

Progression: Passed qualifying exam.

Research topic: Modeling Microstructural Effects on Environment-Induced Cracking of Al-Mg Alloys.

## 2. Darian Perez

Start Date: August 2021

Degree: M.S. in AE, Ph.D. in AE

Progression: Preparing for qualifying exam.

Research topic: Machine-learning enabled homogenization of chemo-mechanical systems.

## 1. Jaechan Pyo

Start Date: August 2021

Degree: M.S. in AE, Ph.D. in AE

Progression: Preparing for qualifying exam.

Research topic: Multi-scale simulations of composite cathode behavior.

**B2. M.S. Students****B.2.a - Graduated**

## 3. Wyatt M. Amacker

Date of Graduation: Summer 2021

Special problem topic: Structural Analysis of Active Flow Control Aircraft

Current Position: Structural engineer at the Naval Air Systems Command (NAVAIR)

## 2. Donald Bistri

Date of Graduation: Fall 2019

Special problem topic: Non-linear kinetics interface element for modeling multi-particle behavior in Li-ion electrodes

## 1. Kyle Solomon

Date of Graduation: Summer 2018

Special problem topic: Finite element analysis of composite components for crashworthiness of robotic landing gear structures.

**B.2.b - In Process**

1. Shivani Lodha  
 Expected graduation: Summer 2022  
 Special problem topic: Chemo-mechanics of swellable elastomers.

**B3. Undergraduate Students**

7. Saba Z. Shaik (**PURA Award**, Fall 2019 - Spring 2021)
6. Wouter van De Groep (Fall 2019, Spring 2020)
5. Denny H. Lee (Fall 2019)
4. Rukmini Roy (Spring 2019)
3. Sam Kemp (Current, Spring 2017 - **PURA Award**, Fall 2017, Spring 2018 - **UIRA Award**, Fall 2018)
2. Martin Kurien (Summer 2016, Fall 2016, Spring 2017)
1. Nick Liccini (Summer 2017 - **MS&T Grant**)

**B4. Service on thesis or dissertation committees****B4.a. Internal. (Student, School, Advisor, Date)**

13.	Hernan Logarzo	AE	Julian Rimoli	in progress
12.	Yining Chen	AE	George Kardomateas	in progress
11.	Mark Leader	AE	Graeme Kennedy	Spring 2021
10.	Marc Papakyriakou	ME	Shuman Xia	Spring 2021
9.	William R Johnson	AE	Massimo Ruzzene	Fall 2020
8.	Romain Gerbe	ME	Massimo Ruzzene	Fall 2020
7.	Kenneth Hart	AE	Julian Rimoli	Spring 2020
6.	Jared A Tippens	ME	Matthew T McDoWell	Spring 2019
5.	German Capuano	AE	Julian J. Rimoli	Spring 2019
4.	Ting Wei Chin	AE	Graeme Kennedy	Spring 2019
3.	Terry Stevenson	AE	Glenn Lightsey	Fall 2018
2.	Kevin Garanger	AE	Eric Feron	Spring 2018
1.	Giuseppe Trainiti	AE	Massimo Ruzzene	Spring 2018

**B5. Mentoring of postdoctoral fellows or visiting scholars**

No Data

**C. Educational Innovations and Other Contributions****C1. Course Improvements**

- **Remote Teaching of AE 2610 and AE 3610:** Developed the pedagogical structure for fully-remote delivery of of undergraduate laboratories in AE 2610 and AE 3610 which involve 12 separate experiments. Labs were successfully delivered through a series of pre-recorded videos as

well as live conference calls. Lectures were pre-recorded to make room for live breakout problem solving sessions to increase student engagement.

- **AE 3140 - Structural Analysis:** Developed an in-class assignment whereby students design a truss structure using their own finite element code and then proceed to manufacture the structure in the Aero Maker Space. The structures are then tested in the classroom where students aim to have the lightest structure that can withstand a predetermined load.
- **AE 1601 - Introduction to Aerospace Engineering:** Merged various activities for this course with our new prototyping facilities such as their balsa glider competition and rocket design. The students now use rapid prototyping equipment such as laser cutters and 3D printers to undertake these project. Also developed a 1 1/2 hour lecture introducing the students to our prototyping facilities under the Aero Maker Space. Through this lecture students familiarize themselves with the basics of training and using these facilities.

## VI. Service

### A. Professional Contributions

#### A1. Society Offices, Activities, and Membership

- Member, American Society of Mechanical Engineers, 2012 – present.
- Member, Society of Engineering Science, 2012 – present.
- Senior Member, American Institute of Aeronautics and Astronautics, 2016 – present.
- Member, American Chemical Society, 2016 – present.

#### A2. Organization and Chairmanship of Technical Sessions, Workshops and Conferences

6. "Mechanics of Energy Materials." 19<sup>th</sup> U.S. National Congress on Theoretical and Applied Mechanics. *Upcoming* Austin, TX, 2022.
5. "Mechanics Of Electrochemically Active And Ferroelastic Materials." Annual Technical meeting of the Society of Engineering Science. Virtual 2020.
4. "Mechanics of electrochemically active materials." Annual Technical meeting of the Society of Engineering Science. St. Louis, MO, 2019.
3. "Electro-Chemo-Mechanics of Energy Materials". United States National Congress on Computational Mechanics. Chigao, IL, 2018.
2. "Energy Materials". Annual Technical meeting of the Society of Engineering Science. Boston, MA, 2017
1. "Computational Multiphysics Mechanics of Materials and Structures." Annual Technical meeting of the Society of Engineering Science. Boston, MA, 2017.

**A3. Technical Journal or Conference Referee Activities**

15. Acta Mechanica
14. Computers and Fluids
13. Energy Storage Materials
12. Electrochimica Acta
11. European Journal of Mechanics - A/Solids
10. Extreme Mechanics Letters
9. International Journal of Solids and Structures
8. The Journal of Physical Chemistry
7. Journal of Applied Mechanics
6. Journal of the Electrochemical Society
5. Journal of the Mechanical Behavior of Biomedical Materials
4. Journal of the Mechanics and Physics of Solids
3. Nature Materials
2. Smart Materials
1. Soft Matter

**A4. Proposal and Panels Reviews**

- National Science Foundation:

Fall 2019, Panel Reviewer in the Mechanics of Materials and Structures (MoMS) program.

Fall 2021, Panel Reviewer in the Mechanics of Materials and Structures (MoMS) program.

**B. Public and Community Service**

No Data

**C. Institute Contributions****C1. College Committee Service**

- Member, CoE Online Labs Task Force, Spring 2020 - Fall 2020. Lead by: Dean Larry Jacobs.



**C2. School Committee Service**

- Member (elected), Faculty Advisory Committee. Fall 2021 – present.
- Chair, Committee on Shared Spaces & Laboratories. Fall 2019 – present.
- Member, Committee AE Engulfing Educational Experience (AE4). Fall 2019 – present.
- Member, Committee on Diversity & Inclusion. Fall 2018 – present.
- Member, Committee on Manufacturing & Prototyping facilities. Fall 2017 – Spring 2019.
- Member, Committee on Facilities & Space Planning. Fall 2017 – Fall 2019.

**C3. Program Development: Academic**

- **Aero Maker Space, Faculty Director.** Prof. Di Leo is the faculty director of the Aero Maker Space at the School of Aerospace Engineering at Georgia Tech, and has been involved with its development since its inception. Prof. Di Leo oversees a group of 3 professional machinists staff and 25 undergraduate students who operate three separate facilities capable of rapid prototyping, metal machining, and fiber composite manufacturing. The Aero Maker Space is a new addition the academic program enabling undergraduate and graduate students to ideate, realize, and test their research ideas in a safe and expeditious manner.

**C4. Other Institute Service Contributions**

- 2018 Diversity and Inclusion Fellow
- Class of 1969 Teaching Fellow, Fall 2017.