

Author since 2004; *h* Index = 43: [Google Scholar](#).
El Kadiri, Haitham (*US Citizen*).

CONTACT
INFORMATION

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PROFESSIONAL
PREPARATION

Mines de Paris (Mines ParisTech) Center des Matériaux, Evry France

Ph.D., Materials Science and Engineering **Oct. 1999 - Apr. 2004**

- Dissertation Topic: Mechanisms of High Temperature Oxidation in Alumina-Forming Alloys
- Advisor: Yves Bienvenu, Régine Molins
- Distinction: Very Honorable

Université de Nice / Mines de Paris (Mines ParisTech), CEMEF, France

D.E.A. (e.q. M.S.), Physics and Condensed Matter **Oct. 1998 - Sep. 1999**

- Thesis: Mitigating Asphaltene Viscosity
- Advisor: Isabelle Hénault, Patrick Navard

Ecole Nationale de l'Industrie Minérale, ENIM, Rabat, Morocco

National Engineer (Ingénieur d'État), Materials Science **Oct. 1993 - Jun. 1996**

- Dissertation Topic: Energy Storage for Solar Panels
- Advisor: Salah El Mujahid
- Distinction: Very Honorable with Congratulations

Center for Advanced Vehicular systems, CAVS, Starkville, Mississippi, USA

Post Doctoral Associate **Apr. 2004 - Feb. 2006**

- Multistage fatigue characterization and modeling of Al-7075-T651
- Multistage fatigue characterization and modeling of Cast and Wrought Mg alloys
- Established the mechanical and characterization laboratories of CAVS
- Advisor: Mark F. Horstemeyer

APPOINTMENTS

Michael W. Hall School of Mechanical Engineering , Mississippi State University

Director & PACCAR Chair Professor **April 2024 - Present**

Developed a novel vision providing a paradigm shift in academia on how to best prepare undergraduate students for industry, technology innovation, and entrepreneurship in the area of deep technology creation and commercialization. The vision relies on integrating Teaching and Research through a novel concept of "Innovation Faculty" in the P&T policy where the incentives are aligned with the market needs including IP, industry funds, and start-up companies. **Raised in excess of \$30 Millions for the Vision Implementation in 4 years**

Mississippi State University

Moroccan Programs Coordinator **Nov. 2016 - Present**

Broker partnerships with the public and private sectors in Morocco and African countries in the areas of economic development, new academic development programs, and student recruitment.

Mechanical Engineering Department, Mississippi State University

Head & PACCAR Chair Professor

May. 2020 - Mar. 2024

Developed a novel vision providing a paradigm shift in academia how to best prepare undergraduate students for industry, technology innovation, and entrepreneurship in the area of deep technology.

Mechanical Engineering Department, Mississippi State University

Whiteside and Coleman Associate Professor

Aug. 2015 - Present

Assistant Professor

Aug. 2009 - Aug. 2015

A passion to identify very small to medium length scale mechanisms governing metallurgical evolving system through a fundamental understanding supported by combined characterization and ICME modeling. This understanding is used to identify manufacturing strategies for novel materials discovery critical to the manufacturing, energy, health, and national security industries.

Center for Advanced Vehicular Systems, Mississippi State University

Assistant Research Professor (CAVS)

Feb. 2006 - Aug. 2009

Adjunct Research Professor (ME)

- Developed Characterization and Mechanical facilities at CAVS
- Developed Split-Hopkinson Bar systems at CAVS
- Led several research teams funded by NSF, DoD and DoE on fatigue, Mobile Hospitals Laser Engineering Net Shape Processing, Bio-Inspired Armor Systems, Magnesium Processing, Crystal Plasticity Modeling of hexagonal close-packed polycrystalline materials, Processing and Mechanical Behavior of Titanium Alloys, and fatigue behavior of 7075-T651 aluminum alloys.

HONORS AND AWARDS

- 2016 Mechanical Engineering Outstanding Senior Faculty Research Award, April 2017
- StatePride Research Award 2011, Mississippi State University
- StatePride Research Award 2010, Mississippi State University
- CAVS Award for establishing materials and mechanical laboratories, July 2006
- Awarded Very Honorable PhD thesis dissertation, Paris, France 2004
- Won the Graduate Assistantship and Fellowship of *Excellence Eiffel Tour*, France 1998-1999
- Awarded third best High school Student, School Hassan II, Morocco 1999
- Won National Common Exam in Mathematics, Physics, and Chemistry for ENIM, Rabat, Morocco 1993
- Awarded First Best Sophomore Student in Mathematics and Physics, Tétouan Morocco 1992
- Awarded First Best Freshman in Mathematics and Physics, Tétouan Morocco 1991
- State Finalist of Olympiads in Mathematics, Morocco 1988
- State Finalist of Olympiads in Mathematics, Morocco 1987
- Awarded First Best student in Ibnou-Rushd Tétouan Elementary School, Morocco 1983

PROGRAM DEVELOPMENT, Total >\$55 Million

Donor - Michael W. Hall

- Amount: **\$15,000,000**
- Title: Endowment for a Chair Professor on Gas Separation Technologies
- Dates: 10/2023 - 9/2025
- Role: Director of School.

Navy - Carderock

- Amount: **\$850,000**
- Title: Development of a Novel Plate Rolling Mill
- Dates: 8/2024 - 11/2024
- Role: Principal Investigator (PI) .

Navy - ONR

- Amount: **\$5,250,000**
- Title: Novel Materials Informatics Approach for Developing Innovative Materials
- Dates: 8/2024 - 7/2029
- Role: Principal Investigator (PI) .

Donor - Ford Gertrude Foundation

- Amount: **\$1,000,000**
- Title: IDEELab Renovation
- Dates: 12/2023 - 11/2028
- Role: Michael W. Hall ME School Director .

Donor - Ronnie Martin

- Amount: **\$40,000**
- Title: Formula SAE Support
- Dates: 12/2021 - 11/2025
- Role: Michael W. Hall ME School Director .

Donor - Chris Ewing and Frank Kessler

- Amount: **\$500,000**
- Title: Faculty Support
- Dates: 12/2023 - 11/2028
- Role: Michael W. Hall ME School Director .

Donor - Travis Mitchell

- Amount: **\$750,000**
- Title: IDEELab Renovation
- Dates: 12/2023 - 11/2028
- Role: Michael W. Hall ME School Director .

Donor - Michael W. Hall

- Amount: **\$15,000,000**
- Title: Endowment to Name the Mechanical Engineering Department
- Dates: 10/2023 - 9/2025
- Role: Director of School.

Donor - Michael W. Hall

- Amount: **\$1,660,000**
- Title: Endowment and Expendable Support for IDEELab
- Dates: 10/2022 - 9/2023
- Role: Department Head.

Donor - Michael McDaniel

- Amount: **\$750,000**
- Title: Faculty Support, IDEELab renovation, and Startup Funds

- Dates: 10/2022 - 9/2027
- Role: Department Head.

Steel Dynamics Incorporation

- Amount: **\$160,000**
- Title: Improvement of Charpy Performance of HSLA Steels
- Dates: 10/2022 - 9/2023
- Role: Principal Investigator (PI).

Industry - Confidential

- Amount: **\$299,000**
- Title: Creation of a Novel Tool Steel
- Dates: 11/2022 - 10/2023
- Role: Principal Investigator (PI).

National Science Foundation, NSF

- Amount: **\$250,000**
- Title: Partnership for Innovation - Technology Transfer: Novel Mechanical Testing Technology with Intermediate Speed Actuation to Improve Manufacturing and Safety
- Dates: 10/2020 - 9/2022
- Role: Principal Investigator (PI).

National Center for Manufacturing Sciences (NCMS)

- University Account No: 361512
- Sponsor Grant No: 202031141054
- Award Amount: **\$465,102**
- Title: A Coupled Thermo-Mechanical Approach to Quantify the Chemistry-Process-Structure-Property-Performance (CPSPP) Relationships of Additive Manufacturing Processes
- Dates: 09/21 – 09/23
- Role: Principal Investigator

United States Department of Army (ARMY) (DOD) TACOM

- University Account No: 360774-060803-021000 (child of 360771)
- Sponsor Grant No: W56HZV17C95
- Award Amount: **\$1,522,200**
- Title: SiMBRS II TO002- Advanced Modeling and Simulation of Multi-Physics Material Response in Geo-environments- Topic 3
- Dates: 09/22/19 – 09/21/23
- Role: Principal Investigator

United States Army Research Laboratory (ARL) (DOD)

- University Account No: 360647-060803-021000 (Child of 360636)
- MSU Grant No: G00001508
- Award Amount: **\$464,520.76**
- Title: Transitioning Material Systems from Laboratory to Fabrication
- Dates: 07/31/18 - 07/30/19
- Role: Principal Investigator

United States Department of Army (ARMY) (DOD) TACOM

- University Account No: 360774-060803-021000 (child of 360771)
- MSU Grant No: G00002858

- Award Amount: **\$358,983.32**
- Title: SiMBRS II TO002- Advanced Modeling and Simulation of Multi-Physics Material Response in Geo-environments- Topic 3
- Dates: 09/22/17 – 09/21/20
- Role: Principal Investigator

US Department of Transportation (DoT) Federation Aviation Administration (FAA)

- University Account No: 322989 010300 027000 900100
- Award Amount: **\$268,243.00**
- Title: Ground Collision Severity Study
- Dates: 09/22/17 – 09/21/20
- Role: Principal Investigator

United States Army Research Laboratory (ARL) (DOD)

- University Account No: 360647-060803-021000 (Child of 360636)
- MSU Grant No: G00001508
- Award Amount: **\$626,969.87**
- Title: Transitioning Material Systems from Laboratory to Fabrication
- Dates: 07/31/15 - 07/30/16
- Role: Principal Investigator

United States Department of Army (ARMY) (DOD) TACOM

- University Account No: 360716-193600-021000 (child of 360713)
- MSU Grant No: G00002339
- Award Amount: **\$364,736.60**
- Title: WD67 Modeling and Simulation of Multi-Physics Material Response in Geo-environments (Topic 1)
- Dates: 09/30/16 – 08/30/18
- Role: Principal Investigator

United States Army Research Laboratory (ARL) (DOD)

- University Account No: 360647-060803-021000 (Child of 360636)
- MSU Grant No: G00001508
- Award Amount: **\$528,319.00**
- Title: Transitioning Material Systems from Laboratory to Fabrication
- Dates: 07/31/16 - 07/30/17
- Role: Principal Investigator

United States Army Tank Automotive and Armaments Command (DOD)

- University Account No: 360667-060803-021000
- MSU Grant No: G00001508
- Award Amount: **\$527,075.75**
- Title: WD63- HPC Modeling and Definition of Blast Environment and Loads on Surfaces
- Dates: 01/13/16 – 01/12/17
- Role: Principal Investigator

United States Army Research Laboratory (ARL) (DOD)

- University Account No: 360647-060803-021000 (Child of 360636)
- MSU Grant No: G00001508
- Award Amount: **\$1,151,121.00**
- Title: Transitioning Material Systems from Laboratory to Fabrication

- Dates: 07/31/15 - 07/30/16
- Role: Principal Investigator

Engineering Research & Development Center (ERDC) (DOD)

- University Account No: 360610-060803-021000
- MSU Grant No: G00001290
- Award Amount: **\$518,293.00**
- Title: Phase 2- Integrated Virtual Prototyping for Product Engineering and Design- Integrated Virtual Prototyping of High Strength Steels
- Dates: 03/25/15 - 03/24/16
- Role: Principal Investigator (Child-PI).

***** Tenure *****

The Department of Defense: Consortium for Energy, Environment, and Demilitarization , CEED

- University Account No: 360554-060803-021000
- MSU Account No: G00000243
- Award Amount: **\$505,737.00**
- Title: Validated Multiscale Metal Materials Model (V4M)
- Dates: 01/16/14 - 09/18/14
- Role: Child Principal Investigator (Child-PI).

National Science Foundation, NSF

- Amount: **\$ 285,293.00**
- Title: DMREF: Designing Materials to Revolutionize and Engineer our Future: COLLABORATIVE: Multiscale Modeling and Characterization of Twinning-Induced Plasticity and Fracture in Magnesium
- Dates: Jan. 2013 - Jan. 2016
- Role: Principal Investigator (PI).

The Department of Defense: Army Research Office, ARO

- Amount: **\$ 66,818.00**
- Title: Dynamic Failure Mitigation Through Microstructure Control: Application to Aluminum and Magnesium Alloys
- Dates: Jun. 2013 - Dec. 2014
- Role: Principal Investigator (PI)

Idaho National Laboratories, INL, Battelle Energy Alliance, LLC (DOE)

- Amount: **\$ 80,500.00**
- Title: Modeling of Tetragonal-Monoclinic Transition and Breakaway Oxidation of Zr Cladding Based on In-Situ High Micro-Raman Spectroscopy
- Dates: Jan. 2012 - Oct. 2013
- Role: Principal Investigator (PI)

National Science Foundation, NSF

- Amount: **\$ 659,981.00**
- Title: MRI: Acquisition of a multi-user, analytical transmission electron microscope (TEM) for multi-disciplinary research and training
- Dates: Sep. 2011 - Aug. 2014

- Role: Senior Investigator (SI)

Idaho National Laboratories, INL, Battelle Energy Alliance, LLC (DOE)

- Amount: **\$ 97,439.00**
- Title: Modeling of Tetragonal-Monoclinic Transition and Breakaway Oxidation of Zr Cladding Based on In-Situ High Micro-Raman Spectroscopy
- Dates: Jan. 2012 - Oct. 2012
- Role: Principal Investigator (PI)

Idaho National Laboratories, INL, Battelle Energy Alliance, LLC (DOE)

- Amount: **\$ 79,998.00**
- Title: Modeling of Tetragonal-Monoclinic Transition and Breakaway Oxidation of Zr Cladding Based on In-Situ High Micro-Raman Spectroscopy
- Dates: Jan. 2011 - Oct. 2011
- Role: Principal Investigator (PI)

The Department of Defense: National Automotive Center (NAC)

- Amount: **\$ 499,990.74**
- Title: SimBRS WD 41: Multiscale Modeling of Metal Component Reliability and Safety
- Dates: Oct. 2010 - Sep. 2012
- Role: Co-Principal Investigator (Co-PI)

The Department of Energy

- Title: Southern Regional Center for Lightweight Innovative Design – Phase IV
- Amount: **\$ 4,000,000.00**
- Dates: Jul. 2010 - Jun. 2012
- Role: Senior Investigator Investigator (SI)

The Department of Energy

- Title: Southern Regional Center for Lightweight Innovative Design
- Amount: **\$ 1,600,000.00**
- Dates: Jul. 2007 - Jun. 2010
- Role: Co-Principal investigator Investigator (SI)

The Department of Defense: National Automotive Center (NAC)

- Title: Simulations and Characterization of Biologically Inspired Materials
- Amount: **\$ 418,000.00**
- Dates: Jul. 2007 - Jun. 2009
- Role: Co-Principal Investigator (Co-PI)

The Department of Defense: National Automotive Center (NAC)

- Title: Develop Macroscale Model for Metal PM Alloys
- Amount: **\$ 4,919,989.00**
- Dates: Sep. 2004 - Sep. 2009
- Role: Senior Investigator Investigator (Co-PI)

NAVY/SBIR: Subcontractor of Optomec Inc.

- Title: Inconel Blisk repair Technology
- Amount: **\$ 13,000.00**
- Dates: Jul. 2008 - Jun. 2009
- Role: Principal Investigator (PI)

The Department of Defense: Defense University Research Instrumentation DURIP-DOD

- Title: *In situ* Fatigue Field Emission-Scanning Electron Microscope
- Amount: \$ 337,000.00
- Dates: Jan. 2006 - Dec. 2008
- Role: Co-Principal Investigator (Co-PI) with Newman, J.C.-Jr

CAVS Initiative, CAVS

- Title: Training on SEM, TEM, and X-Ray CT to foster Collaborative Research
- Amount: \$ 100,000.00
- Dates: Jan. 2006 - Dec. 2006
- Role: Co-Principal Investigator (Co-PI)

TEACHING EXPERIENCE

Machine Design, MSU

- *Textbook:* R.G. Budynas and J.K. Nisbett, Shigley's Mechanical Engineering Design
- *ME 4403* **Spring 2012**
- *Global index:* 4.0 for Spring 2012.
- *Student comments:* (Spring 2012) "In seven semesters at MSU, I have never had a Professor that I enjoyed more than Dr. El Kadiri. He went out of his way to make sure everyone understood the material and would stop whatever he was doing outside of class to answer questions. By far, the best instructor I've ever had", "Enjoyed your teaching style", "Overall good class. Great instructor", "Liked the overall pace of the class. Grades on homework and tests were fair", "Great Teacher".

Materials for Mechanical Engineering Design, MSU

- *Textbook:* W. D. Callister, Jr., and D.G. Rethwisch, Fundamentals of Materials Science and Engineering
- *ME 3403* **Fall 2009 - Spring 2020**
- *Global index:* Average 5 years: 4.4
- *Student comments:* (Fall 2011) "Teach more classes", "The most enthusiastic instructor I have had", "Great class", "Great Teacher", "Class was really interesting", "Enthusiasm made the class interesting and enjoyable! learned a great deal", "Very interesting, makes me wish there were more courses on materials at this university", "I am taking this class as a substitute for the CHE materials class and I am incredibly glad to have this class instead. I have learned a tremendous amount in this class", "Very expressive", (Spring 2011) "did very good power point slides with visuals", "very enthusiastic", "did a great job conveying an abstract subject that can be hard to visualize", "...really understands his information and he is fairly good at explaining", "great job", "He is really intelligent", (Fall 2010-Spring 2010) "very enthusiastic about course material and very knowledgeable teacher", "very good well prepared lectures", "did a good job of teaching a very difficult subject", "material is tough but very nice Professor", "I greatly enjoyed seeing teacher so passionate about his career", "Haitham is a very intelligent and enthusiastic professor", "very enthusiastic about the materials. The material is tough but he is very ready and patient to help someone learn it", "the instructor was very enthusiastic and approachable, and made it to a point to get to know the students which I really appreciated", (Fall 2009) "Great Teacher",

“the instructor has broad knowledge about the subject”, “I learned a great deal in this class”, “it was a difficult class but Haitham is very smart”, “Honestly, there was a period of time prior to this class that I was strongly considering changing my major. Kadiris’s depth of knowledge and strict realistic attitude toward engineering change that for me. I described myself as having an intellectual high after every course because of the depth and fullness of his lectures. The labs were a good chance to see first-hand the concepts we were learning in the class and have made me want to do research at CAVS this summer. I would recommend Kadiri to you can def. tell he is passionate about the material. It really helps make me care when I can tell that the prof. does. The Labs were really useful understanding the class”.

Dislocations and Defects, MSU

- *Textbook*: Hirth JP, and Lothe J, Theory of Dislocations.
- *ME 8990*
- *Global index*: 4.5

Spring 2013

MENTORING

List of previous and current Research Professors, Post Doctoral Associates, PhD students, Master Students, and Undergraduate Researchers that I have mentored while they were funded under various projects

Research Professors (4)

- *Andrew Oppedal*: “Fundamental studies on the behavior of HCP structures”, (Fall 2015-Present)
- *Yubraj Paudel*: “Full-field and mean-field crystal plasticity simulations on hexagonal metals and multi-phased steels,” (Spring 2019-Present)
- *Bin Li*: “Fundamental studies on the behavior of HCP structures”, (Fall 2009-Fall 2011)
- *Mohsen Asle Zaeem*: “Phase-field modeling of microstructural evolutions in crystalline materials,” (Fall 2011-Fall 2012)

Post-Doctoral Associates (7)

- Ali Fadavi Boostani: “Phase field simulations of martensitic transformation in third generation advanced high strength quenching and partitioning steels ”, (Fall 2017-Spring 2019)
- Paliwal Bhasker: “Phase field simulations of martensitic transformation in third generation advanced high strength quenching and partitioning steels ”, (Spring 2018-Fall 2019)
- Christopher D. Barrett: “Atomic structure of grain and anti phase boundaries in third generation advanced high strength steels ”, (Summer 2014-Fall 2017)
- Quancang Ma: “Crystal plasticity and recrystallization in Mg alloys”, (Fall 2009-Fall 2011)
- Andrew L. Oppedal “ Crystal Plasticity on HCP structures with a focus on Mg” (Spring 2010 - Present)
- Mohsen Asle Zaeem: “Phase-field modeling of microstructural evolutions in crystalline materials” (Spring 2009 - Fall 2011)
- Hongjoo Rhee: “Bio-Inspired Armor Systems”, (Fall 2007 - Spring 2009).

Ph.D students as Primary Major Advisor (12)

- *Matthew Cagle*: “Mechanical behavior of Quenching & Partitioning steels” (Fall 2016 - Summer 2020)
- *Deepesh Giri*: (co-Major) “MD simulations of twin nucleation in magnesium” (August 2015 - Spring 2020)
- *Mukti Patel*: “A micromechanical crystal plasticity formulation for cross-slip and cross-twinning in hexagonal close-packed metals” (August 2014 - Fall 2020)
- *Yub Raj Paudel*: “ Micromechanics-based simulations of twin nucleation in Mg” (Summer 2014 -

- Spring 2019)
- *Shiraz Mujahid*: “Effect of Mn, C, and Si on martensitic transformation from austenite in advanced 3GAHSS” (August 2015 - Summer 2019)
 - *Robert Allen*: “Effect of dislocation transmutation by twinning on strain hardening in Hexagonal close-packed Metals using crystal plasticity” (Spring 2014 - Fall 2018)
 - *Aidin Imandoust*: “Mechanisms of rare-earth effect on dynamic recrystallization in magnesium” (Spring 2014 - Fall 2018)
 - *Vahid Tari*: “ Full Field modeling of twinning-induced hot-spots in TWIP steels and magnesium” (Spring 2012 - Fall 2015)
 - *James C. Baird*: “Effect of grain GB energy on texture selection during dynamic recrystallization in magnesium ” (Fall 2009-Present)
 - *Mahmood Mamivand*: “Phase-field modeling of tetragonal-monoclinic transformation in zirconia” (Graduated Summer 2014)
 - *Christopher Barrett*: “Atomic structure of asymmetric tilt GBs and their effect on the plasticity of magnesium” Bagley Fellowship Award (Graduated Spring 2014)
 - *Andrew Oppedal*: “Effect of dislocation transmutation and accommodation effects by deformation twinning on the plasticity of pure magnesium” (Graduated Spring 2010).

Selected Ph.D students as Committee Member (>15)

- *Weiwei Song*: “Corrosion-Fatigue of an AM30 Magnesium Alloy” (2011 - Present)
- *Denver W. Seely*: “An Analysis of Functionally Graded Titanium Based Alloy Armor for Maximizing Energy Absorption” (2010 - Present)
- *Wilburn Whittington*: “High strain rate anisotropy of magnesium alloys” (2010 - Present)
- *Jairus Bernard*: “Fatigue crack growth mechanisms in magnesium alloys” (2008 - Spring 2013)
- *Michael W. Trim*: “Mechanisms of high strain rate deformation and geometric effects on elastic-stress wave propagation in Ram Horns” (2008 - Spring 2011)
- *Jesse Sherburn*: “Development of internal state variable model in geophysics” (2006 - Spring 2010)
- *Brian Jordon*: “Fatigue crack growth mechanisms in Al-7075 and Mg alloys” (2007 - 2010)
- *Paul Allison*: “Powder Metal Structure-Property Relations: presently researcher at Army ERDC Laboratory” (2006 - 2009)
- *Matthew Tucker*: “Multiscale modeling of high-strain rate phenomena” (2006 - 2009)

Master’s Student as Primary Major Advisor (4)

- *William Russel*: “An *in situ* Electron BackScattered Diffraction (EBSD) study of TRIP effect in 3GAHSS” (Fall 2016 - Fall 2018)
- *John Bourgeois*: “An *in situ* Electron BackScattered Diffraction (EBSD) study of TRIP effect in 3GAHSS”(Summer 2014 - Fall 2016)
- *Nicholas Bratton*: “An *in situ* Electron BackScattered Diffraction (EBSD) study of damage anisotropy in textured magnesium” (Spring 2010 - Fall 2012)
- *Janit Kapil*: “An *in situ* Electron BackScattered Diffraction (EBSD) study on the effect of twin-twin interactions on $\{10\bar{1}2\}$ twin nucleation and propagation” (Fall 2009 - Fall 2011)

Selected Master’s Student as Committee Member (>12)

- *Matthew Jones*: “Investigation on the microstructural, thermo-mechanical, and heat-treatment behavior of dual phase and TRIP steels” (Spring 2010 - Fall 2012)
- *Diedra Clark*: “Behavior of DP 600 at intermediate strain rates”
- *Lei Dong*: “Microstructural characterization of Ti-6Al-4V metal chips by focused ion beam and transmission electron microscopy (Fall 2008 - Fall 2010)
- *John Gibson*: “Effect of twinning, slip and inclusions on the fatigue anisotropy of textured AZ61 alloy” (2008 - Spring 2010)
- *Joel Stinson*: “Magnesium twinning in full-field crystal plasticity” (Fall 2006 - Spring 2008)
- *Michael W. Trim*: “Turtle shell designed Armor” (Spring 2006 - Spring 2008)
- *Rodolfo Gomez*: “Structure-Property relationship in LENS deposited steels” (Spring 2005 - Fall

2007)

- *Roxana Alvarez*: “Experimental corrosion pitting rate study in Mg” (Fall 2005 - Spring 2007)
- *Christina Burton*: “History effects of 6022 Al Alloy” (Spring 2004 - Fall 2007)
- *Matt Tucker*: “Development of compression, tension, and torsion Hopkinson bar systems in CAVS and high strain rates behavior of Mg alloys” (Fall 2005 - Fall 2006)
- *Lakiesha Williams*: “Development of a multiscale viscoelastic internal state variable model for rabbit tendons” (2004 - Fall 2006)
- *Andrew L. Oppedal*: “Temperature dependence on void growth and coalescence” (Fall 2004 - Fall 2005)

Selected Undergraduate Researchers as Primary Advisor (>37)

- *Cory Krivanec*: “An experimental method for testing materials at the intermediate strain rate with closed loop ” (Spring 2017 - Fall 2017)
- *Paige Netherton*: “Designing novel high ductility magnesium alloys” (Fall 2016)
- *Samuel Whittington*: “Mechanical behavior of aluminum, magnesium, and iron based alloys” (Spring 2015 - Spring 2018)
- *Justin Speed*: “Microstructural optimization of the dynamic behavior of magnesium and aluminum alloys” (Summer 2014 - Fall 2018)
- *Alexander Ellis*: “Processing and Characterization of 3G high strength steels ” (Summer 2014 - Fall 2015)
- *Brenden Barnett*: “Processing and Characterization of 3G high strength steels ” (Summer 2014 - Fall 2016)
- *Ashley Coffman*: “MD simulations of GB atomic structure in 3G high strength steels ” (Fall 2014 - Fall 2015)
- *Zachary Holman*: “Dynamic failure mitigation of Mg alloys ” (Spring 2013 - Fall 2017)
- *Abdallah Sherif*: “Interrupted EBSD characterization of Mg alloys tested under high strain rates ” (Spring 2013 - Fall 2016)
- *Yub Raj Paudel*: “In situ EBSD bending of a ZEK100 Mg alloy” (Fall 2012 - Summer 2014)
- *Adam Dunigan*: “Modeling of strain-rate and Temperature dependence of AZ31 Mg” (Summer 2011, Summer 2012)
- *Shiraz Mujahid*: “Characterization of high temperature oxidation of Zircaloy-4” (Spring 2011 - Spring 2013)
- *Arsalan Adil*: “Advanced Mechanical testing on Mg alloys, EBSD techniques on Mg, Phase field modeling, and EBSD techniques on oxide scales (2008 - Fall 2012)
- *Robert H. Graham*: “Atomic force microscopy on oxide scales over Zircaloy-4” (Fall 2011)
- *Ibrahim Gaber*: “Texture characterization and analyses using Rikagu’s X-Ray diffractometer and MTEX” (2008 - Spring 2012)
- *Ramir Basnet*: “Characterization of high temperature oxidation of Zircaloy-4” (Fall 2011)
- *William Delcambre*: “EBSD technique for Mg texture measurements” (Spring 2011)
- *Christopher Barrett*: “ Molecular Dynamics (MD) simulations of twin nucleation in Mg” (Summer 2010 - Fall 2011)
- *Chesley Rhodes*: “MD simulations of the effect of GB misorientation on twin nucleation in Mg” (Summer 2010)
- *Gregory Houston*: “Implementing dislocation transmutation Theory of twinning in the viscoplastic self-consistent (VPSC) code” (summer 2010 - Fall 2010)
- *John Bryson*: “Crystal plasticity modeling of strain-rate sensitivity in Mg using VPSC” (summer 2010)
- *Steve Wren*: “Crystal plasticity modeling of strain-rate sensitivity in Mg using VPSC” (summer 2010)
- *Wilburn Whittington*: ”High Strain Rates testing using Hopkinson Bars” (2007-2010)
- *James Crawford Baird*: “Texture effect on extrusion of AZ61 and AM30 Mg based alloys” (2006-2009)
- *Abel Lowry*: “Deformation texture in forged Ni super alloys” (2007-2009)

- *Will Vaughn*: “Deformation textured using EBSD on Mg alloys” (2009)
- *Anthony Peebles*: “Deformation texture of Extruded AZ61” (2008-2009)
- *Josh van Landingham*: “Reverse fatigue of Aluminum and magnesium alloys” (2005-2006)
- *Robert Rives*: “Bio-Inspired Multi-Component Systems” (2007)
- *Anna Goblirsch*: “Bio-Inspired Multi-Component Systems” (2007)
- *Tinisha Walton*: “Advanced Mechanical testing on Laser Deposited Low-alloy Steels” (2005-2007)
- *Melissa Cook*: “Transformations in laser deposited low-alloy steels” (2006)
- *Deidre Johnson*: “Microstructure of magnesium alloys” (2006)
- *Douglass Ansel*: “In-situ observation of fatigue crack growth in Al alloys through FEG-SEM” (2005-2006)
- *Devin Sham*: “Monotonic behavior of laser deposited low alloy steels at high temperature” (2005)
- *William Parker*: “Monotonic behavior of laser deposited low alloy steels at high temperature” (2005)
- *John Murphy*: “In-situ observation of Mg alloys deformation through *in situ* optical strain correlation measurement method - Lavision System” (2005)
- *Dileep Godavarthi*: “In-situ observation of material deformation through optical measurement displacement method” (2005)

Technicians (2)

- *Stephen J. Horstemeyer*: “Imaging and analyses using FEG-SEM” (2004-2006) (662-617-4868)
- *David Baker*: “*In situ* Fatigue FEG-SEM characterization, Nanoindentation, and X-Ray CT” (2007-2008) (662-418-9457)

EXPERIMENTAL TECHNIQUES

Equipments used, purchased from vendors, and trained students and technicians in using them for years before Fall 2009. For some of them, I may require a little time to remember the standing operating procedure and regain familiarity

- Electron Backscattered Diffraction (EBSD) and TSL OIM software
- Transmission Electron Microscopy (TEM)
- Imaging and analyses using Field-Emission Scanning Electron (FEG-SEM) Microscopy
- *in situ* fatigue FEG-SEM characterization
- X-Ray Computed tomography (X-Ray CT) using V-Tome system
- Depth-Sensoring Nanoindentation and Microindentation Systems using Hysitron TriboIndenter
- Axiovert Zeiss inverted Optical Microscopy
- Advanced mechanical testings such as creep of thin foils at high temperature and fatigue testing
- Hopkinson bar testing systems
- Texture characterization using X-Ray Rigaku Diffractometer

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120. El Kadiri H, Dahmen M, Bienvenu Y, Malot T, and Horstemeyer MF. Laser beam welding of metal-supported automotive catalytic converters. ICALEO 2004 - 23rd International Congress on Applications of Laser and Electro-Optics, Congress Proceedings (2004).

REPORTS

121. El Kadiri H. Steel research Grand Vision at BCoE. Submitted to Severstal in an effort to obtain an endowed Chair steel position at BCoE (August 9, 2014).
122. Marin EB, Bouvard C, Ma Q, Oppedal AL, and El Kadiri H. Multiscale Material Models and Design Framework for Lightweight Alloys. DOE/SRCLID quarterly report phases III and IV: CAVS/Mississippi State (April 2011).
123. Marin EB, Bouvard C, Ma Q, Oppedal AL, and El Kadiri H, Hammi Y. Multiscale Material Models and Design Framework for Lightweight Alloys. DOE/SRCLID quarterly report phases III and IV: CAVS/Mississippi State (July 2011).
124. Marin EB, Bouvard C, Ma Q, Oppedal AL, and El Kadiri H, Hammi Y. Multiscale Material Models and Design Framework for Lightweight Alloys. DOE/SRCLID quarterly report phases III and IV: CAVS/Mississippi State (Oct 2011).
125. Marine EB, El Kadiri H, Lowry A, Wang PT, and Horstemeyer MF. Modeling the Hot Forging Induced Texture in Nickel-Based Super alloys: IN718 and IN718Plus. AFRL-Miltec Research Technology (2008).
126. El Kadiri H, Potirniche GP, Wang L, Horstemeyer MF, Wang PT, Felicelli D, Rhee H, Middleton J, Williams TN, Oglesby D, Berry JT. Validated Process and Property Modeling of Laser Engineering Net Shaping and Wrought Steel Alloys. NAC-TARDEC-DoD (2007).
127. El Kadiri H, Horstemeyer MF. Root Cause Analyses: Metallurgical Analysis of Aluminum Alloy Seat. Waltonon Engineering (2006).
128. Horstemeyer MF, Oglesby D, Fan J, Gullett PM, El Kadiri H, Xue Y, Burton C, Gall K, Jelinek B, Jones MK, Kim SG, Marin EB, McDowell DL, Oppedal AL, and Yang N. From Atoms to Autos: Designing a Mg Alloy Corvette Cradle by Employing Hierarchical Multiscale Microstructure-Property Models for Monotonic and Cyclic Loads. USCAR-USAMP (2006).

THESIS AND DISSERTATION

129. El Kadiri H. Optimization of FeCrAl-based Alveolar Structures: Oxidation and Mechanical Behavior at High Temperatures of As-Received FeCrAl foils and After Continuous Wave-Laser Welding. Pages: 1-275. Ph.D. Thesis Dissertation Report (2004). Very Honorable.
130. El Kadiri H. Mitigating Asphaltene Viscosity. M.S./D.E.A. Thesis, Mines ParisTech, CEMEF. pp. 1-33 (1999).
131. El Kadiri H and Fardadi H. Energy storage of solar panels. Thesis for State Engineer, Rabat - Morocco (1996)

SELECTED PRESENTATIONS

1. El Kadiri H, Baird JC, Oppedal AL. Effect of grain boundary misorientation on the asymmetry, anisotropy, and nucleation stresses of $\{10\bar{1}2\}$ twinning and non-basal slip in magnesium. Magnesium 2012, 9th International Conference on Magnesium Alloys and their Applications. Vancouver, Canada (2012).
2. El Kadiri, H. A Theory for Interfacial Damage upon Cationic Selective Oxidation of Alloys. In Symposium Multiphysics ", ASME 2009 fall meeting, Lake Buena Vista, Orlando, FL (2009).

3. El Kadiri H, Suri P, Gulsoy O, Park SJ, German RM. Microstructure and Mechanical Properties of Sponge Ti and its Alloy Powders with Various Powder Metallurgical properties. In Symposium, Microstructure/Property Correlation II, Mechanical behavior, Microstructure and Modeling of Ti and its Alloys TMS 2008, New Orleans, LA (2008).
4. El Kadiri H, Horstemeyer MF. 2007. Transient oxidation and Theory for Interfacial Cavitation upon Selective Oxidation. Symposium: Oxidation and Diffusion, chaired by David R. Clarke (Eds.), MST 2007, Detroit, MI (2007).
5. El Kadiri H, Wang L, Felicelli S, Horstemeyer MF, Wang PT. Transformations in Laser Multi-Deposited Medium Carbon Steel. Advances in Microstructure-based Modeling and Characterization of Deformation Microstructures, TMS 2007, Orlando, FL (2007).
6. El Kadiri H. The Mathematics and Applications of X-ray Computed Tomography. Course for Materials Laboratory Workshop, CAVS (2006).
7. El Kadiri H, Molins R, 2003. Abnormal high growth of alumina forming alloys near 900°C. Les Embiez, 2003. France.

INVITED TALKS

8. El Kadiri H. Invited for Keynote Lecture in MiniSymposium on Role of grain boundaries in plasticity and microstructure. Why do magnesium alloys develop sharp texture?. Plasticity 2015, Jamaica, January 3-8, 2015.
9. El Kadiri H. Invited by David McDowell and Thomas Bieler in US National congress of Theoretical and Applied Mechanics (USNCTAM). $\{10\bar{1}2\}$ twinning supremacy. In MiniSymposium, Nano- and Micro- Mechanics of Materials with Microstructure, Lansing-Michigan June 15-20, 2014.
10. El Kadiri H. Third Generation Advanced High strength Steels. ERDC Vicksburg, June 2, 2014.
11. El Kadiri H. Invited by Laszlo Toth to speak in the leading "Twinning Workshop" at Metz France. November 12-13 2013.
12. El Kadiri H. Modeling and Characterization of Ballistic Behavior. ERDC Vicksburg October 22, 2013.
13. El Kadiri H. Mechanisms of $\{10\bar{1}2\}$ twin nucleation from an asymmetric tilt grain boundary. In Symposium, Deformation and Transitions at Grain Boundaries, Materials Science and Technology (MS&T), Montreal, Quebec, Canada, Oct 27-31, 2013.
14. El Kadiri H. The crystallography of shear and shuffles of twinning in hexagonal close-packed structures and mobility of a faceted $\{10\bar{1}2\}$ - $(0001) \parallel \{10\bar{1}0\}$ boundary. Keynote lecture. Magnesium Workshop, An International Workshop on Processing-Microstructure-Mechanical Property of Magnesium Alloys, May 21-24, Madrid 2013.
15. El Kadiri H. Fundamental challenges in the plasticity of HCP structures. Plasticity Jan. 3-8, Puerto-Rico 2012.
16. El Kadiri H. Wide Lab Colloquium at Idaho National Laboratories. October 24-26, 2011.
17. El Kadiri. Current Fundamental Issues in the Plasticity in Hexagonal Close-Packed Structures related to mechanisms of twin-slip interaction in HCP. Materials and Fuels Complex (MFC) Idaho National Laboratories. October 24, 2011.
18. El Kadiri H. Current Fundamental Issues in the Plasticity in Hexagonal Close-Packed Structures related to mechanisms of twin-slip interaction in HCP structures and the resulted macroscopic behavior. CAES-INL. October 25, 2011
19. El Kadiri. Mechanisms of growth stress generation upon selective oxidation of alloys. Engineering Research Office Building at Idaho National Laboratories. October 24, 2011.
20. El Kadiri H. Fundamental mechanism of slip-twin interaction. MagNET (Magnesium Network) Workshop, McMaster Innovation Park, CA. November 7-8, 2011.
21. El Kadiri H. Fundamental mechanisms of slip-twin, twin-twin, and twin-GB interactions. MagNET (Magnesium Network) Workshop, University of Waterloo, CA. August 8, 2011.
22. El Kadiri H. Current Fundamental Issues to Low-Cost Manufacturing of Lightweight Materials. IQPC 4th Annual Advanced Lightweight Materials Workshop. August 10-11, 2011 in Detroit.
23. El Kadiri H. Effect of dislocation transmutation by twinning on modeling strain hardening of HCP structures through crystal plasticity. Keynote lecture. Plasticity Puerto-Vallarta, Mexico,

- 2011.
24. El Kadiri H, and Oppedal AL. Effect of grain boundary misorientation effect on $\{10\bar{1}2\}$ twin nucleation in magnesium. *Materials Science and Technology (MS&T)*, October 17, 2011.
 25. El Kadiri H. Effect of recrystallization and twinning on the extrudability of magnesium alloys. ICME DOE meeting with FORD and GM. January 20, 2010.
 26. El Kadiri H. Crystal plasticity modeling of the mechanical behavior of AM30 and AZ61 alloys. ICME DOE meeting with FORD and GM. June 2, 2010.
 27. El Kadiri H. Effect of dislocation transmutation on the strain hardening of magnesium alloys. ICME DOE meeting with FORD and GM. August 30, 2010.
 28. El Kadiri H. A Theory for Interfacial Damage upon Cationic Selective Oxidation of Alloys. Invited Seminar in UC Berkley January 12, 2009.
 29. El Kadiri H. A Theory for Interfacial Damage upon Cationic Selective Oxidation of Alloys. In Symposium W, Computational Materials Design via Multiscale Modeling, Keynote lecture. MRS 2008 fall meeting, Boston MA December 5, 2008.

SERVICE

Journal Reviewer

- Journal of the Mechanics and Physics of Solids, International Journal of Plasticity, Metallurgical and Materials Transactions, Journal of Engineering Materials and Technology, Philosophical Magazine A, Computational Materials Science.

Proposal Reviewer

- National Science Foundation (NSF), Arlington, Spring 2011.
- National Science Foundation (NSF), Spring 2013.

Professional Society Leadership

- Member, TMS, ASME, MagNet, IMA.
- Chaired the “Deformation 6” Session in the 9th International Conference on Magnesium Alloys, Vancouver, July 8-12 2012.
- Organized MiniSymposium on “Mechanisms of Deformation Twinning” in the International Plasticity Conference, Bahamas, January 2013.
- Organized MiniSymposium on “Mechanisms of Deformation Twinning” in the International Plasticity Conference, Puerto-Rico, January 2012.
- Organized MiniSymposium on “Mechanisms of Deformation Twinning” in the International Plasticity Conference, Puerto-Vallarta, Mexico, January 2011.
- Chaired the “Deformation Twinning” Session in the International Plasticity Conference, January 2011.

Departmental Service

- Member of the Dean committee to establish the MSU-UIR curricula.
- Member of the Dean Advisory Board on National Stature, since Fall 2013.
- Chair, ME Departmental Materials Engineering Standardization ABET Committee, since Fall 2012.
- Chair, ME Departmental Materials Engineering PhD Qualification Exam Committee, since Fall 2012.
- Member, ME Departmental Mechanical Systems Standardization ABET Committee, since Spring 2012.
- Member, ME Departmental PhD Qualification Solid Mechanics and Strength of Materials Exam Committee, since Fall 2012.
- Attempted to initiate Materials Student Chapter, but this has not been successful as yet due to the limited time I had during the past two years.
- Member, ME Departmental Materials Standardization ABET Committee, Fall 2009 to Spring 2012.
- Member, ME Departmental PhD Qualification Materials Engineering Exam Committee, Fall 2009 to Spring 2012.

- Member, ME Departmental Undergraduate Committee, since fall 2009.
- Member of the Materials Working group (MWG).
- Taught FE exam reviews for Materials, 2009.
- Taught FE exam reviews for Materials, 2010.
- Housed and Presented a session of the MWG.
- Introduced MSU workshop on X-Ray Computed Tomography-2006.
- Introduced Workshop at MSU on Electron BackScattered Diffraction from TSL-2007.
- Introduced Workshop at MSU on Image Correlation Methods using Lavision System-2006.
- Introduced Workshop at MSU on Nanoindentation and Microindentation using Hysitron Triboindenter-2007.
- Introduced Workshop at MSU on Optical Microscopy using Zeiss-2006.
- Built Material Characterization Laboratories at CAVS/MSU.
- Purchased materials characterization equipments including FEG-SEM, TSL EBSD Cameras, Depth-Sensing Hysitron Nanoindenter, Depth-Sensing Hysitron Microindenter, Zeiss Axiovert inverted Optical Microscope, X-Ray Computed Tomography System, V-tome-X, Thermogravimetric Analyzer (TGA), Differential Thermo-Analyser (DTA), Differential Scanning Calorimetry DSC, Muffle furnaces, Vacuum furnaces operating at high temperatures, Corrosion laboratory, Hydraulic *in situ* fatigue stage for FEG-SEM, Electromechanical monotonic state for FEG-SEM, Sample preparation facility with automatic polishers, Vibrometer, and electro polishers (\$ 2,000,000.00) (2004-2009).
- Built Characterization and Mechanical testing Laboratories of CAVS/MSU (2004-2009).
- Purchased Electromechanical Instron systems, 350 KN Bi-axial Hydraulic Instron mechanical testing machine, two Fatigue Hydraulic 100 KN MTS machine, Lavision system with Telescope and 3D correlation method system, Optomec Laser Engineering Net Shape System (LENS) machine. Multi-Actuator Fatigue System simulating real-world conditions of Fatigue (\$ 4,000,000.00) (2004-2009).
- Trained Technicians, Post-Doctoral Associates, Graduate students, and Undergraduate students on using equipments (2004-2009).
- Managed Materials and Mechanical Laboratories (2004-2009).

College & University Services

- Chaired Materials Committee to prepare research and education vision report for Severstal,
- Pioneered MSU-UIR partnership creation which is expected to enable MSU to land 500 more undergraduate students and 100 more M.S. students per year in BCoE, adding \$900K in total tuitions and fees paid to MSU starting from Fall 2015, (2011-2014)
- Created and organized an on-campus visit of a high-level delegation from Morocco UIR including President Noureddine Mouaddib, Daughter of King's foreign affairs counselor Hakima Fassi-Fihri, UIR VP of research Abdelaziz Benjouad, and Mohammed Cherkaoui.
- Created and organized a close-door workshop at the Moroccan Embassy in DC, with the Moroccan Ambassador Rachad Bouhlal, VP of GreenTech Marianne McInerney, President of UIR Noureddine Mouaddib, Daughter of King's foreign affairs counselor Hakima Fassi-Fihri, Mohammed Cherkaoui, Roger King, and Mike Mazzola. July 15, 2013.
- Organized a close-door workshop with Bombardier at Montreal between Georgia Tech, University of Waterloo and Aerospace Engineering at MSU (Dr. Rohani, Dr. Lacy, and Dr. Newman), March 12, 2013.
- Initiated substantial efforts for MSU to be part of the new "Mirror-Laboratory Structure of UMI Georgia Tech-CNRS 2958". In addition to a significant international research collaboration horizon, this would make MSU eligible to Europeans funds with high probability for proposal awards. The UMI was approved and signed in Rabat/Morocco on April 04, 2013 by Mr. Holland, President of France.
- Coordinated achievement of signing a Memorandum of Understanding (MoU) between the International University of Rabat (UIR) and MSU. UIR will be the host of the UMI Mirror laboratory of Georgia Tech CNRS partnership. The UIR is located in the TechnoPark Rabat-Sale, which is considered as US model that materializes the Moroccan development programs.

The TechnoPolis Rabat-Sale is devoted to host technology development activities of important international industries, off-shoring activities, as well as education and R&D institutions. At the 2015 horizon the TechnoPolis shall create 30,000 jobs

REFERENCES

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