

K. S. Ravi Chandran

Professor, Department of Materials Science & Engineering
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I. SUMMARY

Current Position:	Tenured Professor
Citizenship:	U.S. Citizen
Current Research Topics:	Computational Alloy Design and Processing of Materials Li-ion Battery Materials Science, Neutron Diffraction
Research supported by:	NSF, AFOSR, ARL, ARPA-E, DOE, DARPA, Private Industry, University Vice-President (Cumulatively about \$9M, about \$320K/year; ~27 years)
Graduate Students Supervised:	Graduated 30 MS & PhD students as sole adviser.
Publications:	165
Citations:	6791, H-index of 41.
Presentations:	122 (invited and others)
Research Laboratory:	Director of Alloy Processing lab with SPS Unit, vacuum sintering and powder processing facilities, Director of mechanical behavior Laboratory, Director of Electrochemical Laboratory

II. RESEARCH BACKGROUND/EXPERTISE

- Alloy Design, Physical Metallurgy, Mechanical Behavior of Materials, Fatigue & Fracture
- Materials Processing by Powder Metallurgy
- Electrochemistry of Li-ion battery electrodes, analytical modeling of Li-ion cells, in-situ neutron diffraction, neutron imaging
- Mathematical modeling of solid-state diffusion and heat transfer problems in materials science
- Synthesis of nano-ceramics, cermets and ceramic coatings, biomedical implant materials

III. ACADEMICS

- Ph. D., Materials Science and Engineering, (1989), Indian Institute of Science, Bangalore, IN
- M. Eng. (Distinction), Physical Metallurgy (1985), Indian Institute of Science, Bangalore, IN
- B. Eng. (Honors), Metallurgical Engineering (1983), PSG Institute of Technology, IN

IV. PROFESSIONAL HISTORY

- **Director**, State Center of Excellence on Titanium and Boride Materials (2005--2010)
- **Air Force Summer Faculty Fellow**: Materials Behavior Branch, Air Force Research laboratory Wright Patterson AFB, OH (Summer 1998)
- **Associate Professor**: Department of Metallurgical Engineering, University of Utah, Salt Lake City, UT (1998-2002); **Assistant Professor**: same as above (1995-98)
- **Research Scientist**: Wright Patterson AFB/Universal Energy Systems (UES), Inc., Dayton, OH (1993-95)
- **U. S. National Research Council Fellow**: Air Force Research Laboratory, Wright-Patterson AFB, Dayton, OH (1989-93)

V. AWARDS

- **Fellow of ASM**, American Society of Materials International, 2017
- **Outstanding Teaching Award**, Department of Materials Science & Engineering, 2019
- **Outstanding Researcher Award**, Department of Materials Science & Engineering, 2016
- **University of Utah Showcase for Extraordinary Faculty Achievements**, 2016
- **Outstanding Teaching Award** (2007), Department of Metallurgical Engineering
- **Champion H. Mathewson Award** (2006) of The Minerals, Metals and Materials Society (TMS-AIME) for notable contribution to Metallurgical Science
- **Stoel Rives Utah Innovation Award Finalist** (2004) for TiB Orthopedic Devices
- **Outstanding Chair Citation**, United Engineering Foundation, NY, 1998
- **Outstanding Teaching Award** (1997), Dept. of Metallurgical Engineering, University of Utah
- **U.S. Air Force Citation for Exemplary Research**, Wright Patterson Air Force base, OH, 1994
- **NRC Fellowship Award**, U. S. National Research Council, U.S. National Academy of Sciences, Washington, 1989-92
- **A. K. Bose Gold Medal**, Indian Institute of Metals (Nationally Best M. Eng. Thesis), 1985
- **K. P. Abraham Medal**, Indian Institute of Science (Top GPA in M. Eng.), 1985
- **A. A. Krishnan Medal**, Indian Institute of Science (Best M. Eng. Thesis), 1985
- **Best B. Eng. Thesis award**, Directorate of Technical Education, Madras, 1983

V. AWARDS for Student Theses

- **2019 Outstanding PhD Thesis**, Department of MSE, Dr. Jun Du, advised by Chandran
- **2022 Outstanding PhD Thesis**, Department of MSE, Dr. Ramana Srinivasan, advised by Chandran

VI. PROFESSIONAL ACTIVITIES & SERVICE

- **Research Collaborations**
 - Ortho Development Corporation, UT (Biomedical Devices), 2003-
 - GE Aviation, OH (Fatigue of Superalloys), 2006-2009
 - Oak Ridge National Laboratory, TN (Neutron Diffraction & Imaging) 2013-

Las Alamos National Laboratory, NM (Neutron Diffraction) 2012-
University of Illinois, Urbana Champagne (Computational Design of Structural Materials)

- **Patents**

US Patent, 7264682 B2: Titanium Boride Coatings on Titanium Surfaces
US Patent, 7501081 B2: Nanostructured Titanium Boride Monolithic Material
US Patent, 7459105 B2: Nanostructured Titanium Boride Monolithic Material

- **Conference Organizer:**

Symposium on Advanced Manufacturing of Powder Metallurgy Titanium

Principal organizer (with Z. Fang, A. Imam and J. Stewart), MS&T2014 Meeting in Pittsburgh October 2014

Symposium on Competing Failure Modes and Variability in Fatigue

Principal organizer (with J. M. Larsen, G. T. Cashman and T. Sakai), Int. Conf. in MS&T2008, Pittsburgh, October 2008. Edited the proceedings published as Int. J. Fatigue, Vol. 32, Issue 3, 2012

Small Fatigue Cracks: Mechanics, Mechanisms and Applications: Principal organizer (with Prof. R. O. Ritchie, and Prof. Y. Murakami), Engineering Foundation International Conference, Kona, Hawaii, December 1998
Edited the proceedings published as a book by Elsevier

- **Panels:**

NRC-AFOSR Review Panels for Proposals (2000, 2002)
NSF-DMR Review Panels for Proposals (2000, 2004, 2008, 2010)

- **Reviewer:**

Acta Materialia, Scripta Materialia, Metallurgical and Materials Transactions, International J. of Fatigue, International J. of Fracture, J. of American Ceramic Society, J. of Testing and Evaluation, Materials Science & Engineering, ASME J. of Engineering Materials and Technology, J. Materials Science, Surface Coatings & Technology

Proposals from NSF, DOE, ARO, AFOSR, ONR and SBIR Programs

- **Professional Service Responsibilities:**

External

Elected Chair, ASM Gold Medal Selection Committee (2020--2021)
Member, ASM Gold Medal Selection Committee (2017-2021)
Member, AISI Awards Committee (2012)
Chair, TMS Awards & Selections Committee (2015-2018)
Key Reader, Board of Review, Metallurgical Transactions A (2003-)
TMS/ASM Mechanical Behavior Committee (2002-)
TMS/ASM Composite Materials Committee (2004-)
TMS/ASM Titanium Committee (2007-)
Consultant, EG&G and Toole Army Chemical Weapons Depot (2006)
Executive Member, TMS Structural Materials Division (1996-2000)
TMS Student Affairs Committee Member (1996-2000)

Internal

MSE Curriculum Committee (2021-)
Chair, College Council (2018-)
MSE Faculty Search Committee (2016, 2018, 2019, 2023-4)
Elected to University Senate, 2016-2019
Assistant Chair, 2002-2005
RPT Committee Chair, 2010-2013
Department Coordinator, Ivor Thomas Building Committee, 2006-2007
Department Newsletter Editor (2005-2012)
Coordinator, Materials Characterization Facility, (1998-)
Member, University Promotion and Tenure Advisory Committee (2007-2010)
Member, University of Utah Tech Transfer Advisory Committee (2004-2010)
Member of University Research Committee (2004)
Undergraduate Student Advisor (2012-2014)
Graduate Admissions committee (1995-2016)
College Curriculum Committee (1995-2003)
Graduate Committees of several MS and PhD students
College Teaching Awards Committee (1995-2003)

VII.1. TEACHING (COURSES)

- **Courses Taught:**

Met. E. 1620	Introduction to Physical Metallurgy	(before 2002)
Met. E. 3530	Experimental Techniques & Laboratory	(all years)
Met. E. 5450	Mechanical Behavior of Materials	(all years)
Met. E. 5760	Capstone Design Problem in Physical Metallurgy	(every alternate year)
Met. E. 6300	Alloy and Material Design	(Graduate Level)
Met E. 6100	Fatigue and Fracture Mechanics	(Graduate Level)

VII.2. LIST OF MS/PHD GRADUATES STUDENTS (Sole Advisor for all students)

35. **Jordan Contreras, PhD 2025**, Processing, Structure and Properties of High Strength Niobium Alloys with W and Hf Alloying, in progress
34. **Zahra Gholamishiri, PhD 2025** Processing by Spark Plasma Sintering and Mechanical Behavior of Niobium Alloys with NbB dispersions, in progress
33. **Shafiqur Jame, MS 2024** Processing and Properties of C103 Niobium Alloy by Spark Plasma Sintering, in progress
32. **Padma Krishnakumar, MS 2024** Electrochemical Performance of Porous SI Electrodes, in progress
31. **Chenguang Yang, PhD 2023**, Electrochemical Performance of SiNW electrodes. Employed at Intel, AZ
30. **Bryce Jolley, PhD 2023**, The Correlative Analysis of Porosity in Additively Manufactured Metals via X-Ray Computed Tomography, Employed at AFRL, Wright Patterson ADB, OH.

29. **Ramana Srinivasan, PhD 2022**, Neutron Scattering of Si Electrodes. Employed at Intel, OR
28. **Ahmed Degnah, PHD 2019**, Processing, and characterization of TiB based metal matrix composites. Employed as faculty at a University in Saudi Arabia
27. **Alex Lark, MS, 2017**, Synthesis of TiB based cermets, 2017, General Dynamics, CT
26. **Hussain Alnasser, MS 2018**, Strength and Ductility of Additive Manufactured Ti cellular structures, Employed I. Kuwait
25. **Samnang Rou, MS, 2018**, First Principles Calculations of Elastic Constants, Employed-no information is available
24. **Jun Du, PhD 2018**, CALPAHD Alloy Design of TiB nanoceramics, 2018, Employed at Rutgers University,
23. **Fei Cao, PhD 2017**, Fatigue of PM Titanium Alloys, Employed at Exponent, Shanghai, China
22. **Shawn Zhang, PhD 2017**, Neutron Imaging of Li-ion Batteries, Employed at Oak Ridge National Lab, TN
21. **Bhaskar Vadlamani, PhD 2017**, Neutron Diffraction in Li-ion Batteries, Applied Materials, Austin TX
20. **Pankaj Kumar, PhD 2017**, Mechanical Behavior of PM Ti alloys, 2017, Employed as faculty in University of New Mexico
19. **Madhu Jagannathan, PhD 2014**, Li-Mg alloy Batteries, Employed at Quantum Scape, San Francisco, CA
18. **Madhu Jagannathan, MS 2011**, Ballistics of Ti-B Materials, Employed at Quantum Scape, San Francisco, CA
17. **Paul Chang, PhD 2011**, Fatigue of Rene88 Superalloy, Employed at Advanced Ceramic Corporation, AZ
16. **Biplab Sarma, PhD 2011**, Accelerated TiB hardening by diffusion, Employed at CBI Technology, UT
15. **Shawn Madtha, MS 2007**, Synthesis of nanostructured TiB, Employed at Intel-Micron Flash Technologies, UT
14. **Curtis Lee, MS 2007**, Wear resistance of boride coatings, 2007, Employed at University of Southern California, CA
13. **Nishant Tikekar, PhD 2007**, Novel boride coatings on titanium, Employed at Axalta Coating Systems, OH
12. **Anil Kumar, MS 2006**, Database system for materials properties, Employed at a software company in MI
11. **Krutibas Panda, PhD 2005**, Synthesis of Ti-TiB composites, Employed at Haliburton, TX
10. **Imad Barsoum, MS 2004**, Fracture of functionally graded materials, Employed at King Faud University, Saudi Arabia
9. **Mike Oja, MS 2005**, Fatigue of Nickel base alloy, Employed at United Technologies Corp, TN
8. **Shampa Aich 2003, MS**, Solid state diffusion coatings on titanium, Employed at Indian Inst. of Technology, Kharagpur
7. **Nan Boonyachut, MS, 2002** Finite element modeling of thermal stress, Employed at a University in Thailand

6. **Vikrant Bansore, MS 2003**, Electro-migration in Copper Interconnects, Employed at Intel, OR
5. **Revti Atri, PhD 2003**, Elastic properties of titanium composites, Employed at Smith International, UT
4. **Firdosh Kavarana, M 1999**, Microscale steel-brass laminates by cold rolling, Employed at CBI Technology, UT
3. **Shankar Srinivasan, PhD 2002**, Fatigue of Beta Titanium Alloys 2002, Employed at Siemens, SC
2. **Sushant Jha, PhD 2002**, Fatigue of Beta Titanium Alloys, 2000; Employed at Wright Patterson AFB, OH
1. **Kyongjun An, PhD 1999**, Thermal Barrier Coatings, Employed in Ajou University, South Korea

VIII.1. RESEARCH LABS/EQUIPMENT IN MY GROUP ACQUIRED BY PI FUNDS

A. Powder Materials Processing Laboratory:

Spark Plasma Sintering Unit: Thermal Technology 10000 A spark plasma sintering system
 2 Sintering Furnaces; 2 Melting furnaces
 Jar Mill, Ball Mill, containers for powder milling in inert environment

B. Physical metallurgy Laboratory:

Optical and stereomicroscopes, mounting and polishing equipment, precision sectioning machines, high temperature inert gas furnace, induction heating unit, high temperature creep testing furnace

2024 Addition: Thermal Technology Vacuum High temperature Furnace (~2200°C max) for treating refractory alloys

C. Fatigue & Fracture Mechanics Laboratory:

MTS servohydraulic fatigue and Instron creep test systems, induction and resistance heating systems and furnaces, Lab-made ballistic armor test system; Buehler Diamond Wheel Saw

D. Li Battery Research Laboratory:

MBraun glove boxes, potentiostats, source meters, Gamry electrochemical testers, Instec substrate heater

VIII.2. FUNDING OF RESEARCH PROJECTS (ACTIVE & COMPLETED)

39. Designing Novel Multicomponent Niobium Alloys for High Temperature: Integrated Design, Rapid Processing & Validation Approach , **ARPA-E**, (PI: Chandran, \$1,471,000, 2021-2024)
38. In Operando Neutron Diffraction Investigation of Li Battery Electrodes, **Office of Science, DoE**, \$560,000 (2018-2023)

37. Physical modeling of COVID-19 infection using Recrystallization Theory in Materials Science, Funded by **3i Initiative, Vice-President Research, University of Utah** \$25,000, (2020-21).
36. Alloy Design and Rapid Processing of Nickel Alloys, **University of Utah Seed Grant** \$24,000, (2020-21).
35. Lead PI of Project: Computational Design, Rapid Processing and Characterization of Multiple Classes of Materials to Accelerate Material Innovation, (2014-18) **DMREF Program, NSF**, \$1,572,000 with University of Utah as lead (\$1,172,000) and D. Trinkle, University of Illinois, as subaward, received \$400,000
34. Research on Consolidation of Hard Particles at High Energies-II, **METSO Corporation**, \$76,000 (2021-22)
33. Mechanical Breakage of Mineral Particles-II, **METSO Corporation**, \$130,000 (2019-21)
32. A new method for low cost production of titanium alloys for reducing energy consumption of mechanical system, **DOE ARPA-E Advanced Manufacturing Initiative**, (Co-PI with Z. Fang) \$1,800,000 (2012-16).
31. Breakage energy of mineral particles at high compressive compactions, **METSO Corporation**, \$79,869 (2016-17)
30. Research on Consolidation of Hard Particles at High Energies, **METSO Corporation**, \$97,608 (2014-16)
29. In-situ neutron diffraction study of electrochemically induced phase transitions in anode materials, **DOE-BES Neutron Scattering Program**, \$414,000, (2012-17).
28. Understanding electrochemically induced phase transitions, **Division of Materials Research, NSF**, \$95,000, (2012-13).
27. REU Supplement for Understanding electrochemically induced phase transitions, **Division of Materials Research, NSF**, \$6,000, (2012-13).
26. Measurement of Particle Consolidation at High Energies, **METSO Corporation**, \$65,000 (2013-14)
25. Determination of Breaking Energy of Material Particles, **METSO Corporation**, \$40,000 (2012-13)
24. Li-Mg Alloys as anodes for energy storage, **University of Utah Seed Grant** \$27,000, (2011-13).
23. Determination of Breakage Energies of Particles, **METSO Corporation**, \$120,000 (2010-11)
22. Exploiting anomalous diffusion near phase transition for deep surface coatings, **Division of Materials Research, NSF**, \$168,340, (2007-09).
21. Designing materials property information system, **University Seed Grant**, \$27,000, (2007-08).
20. State funding for Center of Excellence on Titanium Boride Materials and Biomedical Devices, **Utah State Office of Economic Development**, \$372,000, (2003-08).
19. Industry funding for Center of Excellence on Titanium Boride Materials and Biomedical Devices, **Ortho Development Corporation**, \$382,000, (2003-08)
18. Industry funding for “Center of Excellence on Titanium Boride Materials and Biomedical Devices, **Ortho Development Corporation**, \$40,000, (2003-08)

17. Controlling the Duality of Fatigue for large improvements in fatigue life of engineering materials, Small Grant for Exploratory Research, **Division of Materials Research, NSF**, \$90,000, (2006-07).
16. Orientation Imaging Microscopy of small fatigue cracks, **Vextec Inc.**, DARPA subcontract, \$60,000, (2004-05).
15. Characterization of Magnesium Alloys, US Magnesium, \$46,432, (2002-05)
14. Microstructure and Mechanical Behavior of in-situ Ceramic-Titanium Composites Reinforced with TiB Whiskers, **Army Research Office**, \$325,000, (1999-03)
13. Microstructural Aspects of Small Fatigue Cracks, **Division of Materials Research, NSF**, \$270,000, (1997-00)
12. Fatigue of Beta Titanium Alloys, funded by **Air Force Office of Scientific Research**, \$300,000 for three years, from March 1996
11. Finite Element Modeling of Mechanical Behavior of Functionally Graded Ceramic-Titanium Metal Armor-SBIR Phase II research, **Army Research Laboratory**, Aberdeen Proving Ground, MD (through Cercom, Inc., Vista, CA), \$140,000 for two years, from June 1996
10. Functionally Graded Ceramic-Titanium Metal Armor-SBIR Phase I research, **Army Research Laboratory**, Aberdeen Proving Ground, MD, (through Cercom, Inc., Vista, CA), \$12,000 for six months, from April 1995
9. Thermophysical Properties of Coatings for Thermal Barrier Applications, **Air Force Research Laboratory**, WPAFB, OH, \$ 50,000 for one year from June 95
8. Mechanical Behavior of TiAl Lamellar Polycrystals, **Air Force Office of Scientific Research**, \$ 40,000 for one year, from May 2000
7. Development of Magnesium Alloys, funded by **Magnesium Corporation**, UT, \$50,000 1999-2002
6. Grant for Small Fatigue Cracks, Engineering Foundation Conference, **NSF**, \$ 5,000 for conference support, 1998-1999
5. Grant for Small Fatigue Cracks, Engineering Foundation Conference, **United Engineering Foundation**, New York, \$ 5,000 for conference support, 1998-1999
4. Grant for Small Fatigue Cracks, Engineering Foundation Conference, **AFOSR**, \$6,000 for conference support, 1998-1999
3. Grant for Exploratory Research on Novel Nanoscale Materials, **College of Mines and Earth Sciences**, \$11,000, 1996
2. Grant for Exploratory Research on Synthesis of Cr-Nb Intermetallics, **College of Mines and Earth Sciences**, \$9,000, 1997
1. Grant for Exploratory Research on Research on Lightweight Mg Alloys **College of Mines and Earth Sciences**, \$10,000, 1998

VIII.3. FUNDED RESEARCH INSTRUMENTATION WITH OTHER PIs

- “Acquisition of a Variable Pressure Scanning Electron Microscope with EDAX and OIM for Materials Research.” Funded by Materials Research Instrumentation Program, **NSF**, \$300,000 (Co-PI with Dr. J E. Shield and Dr. A.V. Virkar), 1999
- “Acquisition of a Regional-use Surface Analysis System,” R. Roemer, L. Reith, I. Harvey, S. Anderson (PIs). \$750,000. Contributed a major section for thin film chemical analysis. **NSF** (2005-2006)

IX. LIST OF PUBLICATIONS & PRESENTATIONS

~ 168 Publications including reviews above (Citations ~7300, H-index 44)

~ 120 Presentations

IX.1. EDITED BOOKS/JOURNALS

1. Guest Editor, **International Journal of Fatigue, Special Issue on Competing Failure Modes and variability in fatigue**, Vol. 32, No.3, 2010.
2. Guest Editor, **JOM**, May 2003 Topical Issue: **Titanium-Boron Alloys and Composites**
3. **Small Fatigue Cracks: Mechanics, Mechanisms and Applications**, Proceedings of the International Engineering Foundation Conference, edited by K. S. Ravichandran, R. O. Ritchie and Y. Murakami, Elsevier Science Ltd., London, UK, 1999

IX.2. HANDBOOK CHAPTERS / JOURNAL REVIEWS

168. Yang, C., and KS Ravi Chandran. "A critical review of silicon nanowire electrodes and their energy storage capacities in Li-ion cells." **RSC advances** 13, no. 6 (2023): 3947-3957.
167. Ravi Chandran, K. S. "Fatigue of Fiber-Reinforced Composites, Damage and Failure." **Journal of the Indian Institute of Science** (2022): 1-22.
166. Chandran, KS Ravi, and J. Palmer. "A critical review and assessment of 3D columnar silicon electrode architectures and their performance as negative electrodes in Li-ion cells." **Materials Science and Engineering: B** 271 (2021): 115278.
165. Z. Fang, James D. Paramore, Pei Sun, KS Ravi Chandran, Ying Zhang, Yang Xia, Fei Cao, Mark Koopman, and Michael Free. "Powder metallurgy of titanium—past, present, and future." **International Materials Reviews** (2017): 1-53.
164. P. Kumar, K. S. Ravi Chandran, “Strength-Ductility Property Maps of Powder Metallurgy (PM) Ti-6Al-4V Alloy: A Critical Review of Processing-Structure-Property Relationships,” **Metall. Mater. Trans**, 48A, (2017) p. 2301
163. F. Cao, KS Ravi Chandran. "Fatigue Performance of Powder Metallurgy (PM) Ti-6Al-4V Alloy: A Critical Analysis of Current Fatigue Data and Metallurgical Approaches for Improving Fatigue Strength." **JOM**, Vol. 68, 2016, pp. 735-746
162. K. S. Ravi Chandran, K. B. Panda and S. S. Sahay, “Overview: TiB_w-reinforced Ti Composites: Processing, Properties, Application Prospects and Research Needs,” **JOM**, Vol. 56, No. 5, 2003, pp. 42-48

161. B. Sarma and K. S. Ravi Chandran, "Recent Advances in Surface Hardening of Titanium," Review, **JOM**, Vol. 63, February 2011, pp. 85-92
160. S. K. Jha and K. S. Ravichandran, "Review of High Cycle Fatigue Resistance in Beta Titanium Alloys," **JOM**, March 2000, pp. 30-35
159. K. S. Ravichandran and A. K. Vasudevan, "Fracture Resistance of Structural Alloys," in **ASM Fatigue and Fracture Handbook**, American Society for Materials International, Vol. 19, 1996, p. 381
158. K. S. Ravichandran, "Effect of Crack Shape on Crack Growth," in **ASM Fatigue and Fracture Handbook**, American Society for Materials International, Vol. 19, 1996, p. 159

IX.3. ALL PUBLICATIONS

157. Chandran, KS Ravi, "Mechanics of structural size effect in impact brittle fracture of steels and consequent scaling laws for fracture," **Proceedings of the Royal Society A** 480 (2283), 2023049
156. Mohanty, Trupti, KS Ravi Chandran, and Taylor D. Sparks. "Machine learning guided optimal composition selection of niobium alloys for high temperature applications." **APL Mach. Learn.** 1, 036102 (2023)
155. Yang, Chenguang, and KS Ravi Chandran. "Photolithographic Structuring of Ordered Silicon Micropillar Electrodes for Lithium-Ion Batteries and Electrochemical Performance." **ACS Applied Energy Materials** (2023) 6, 5930–5939
154. Srinivasan, R., and KS Ravi Chandran. "Mechanistic insights into structural parameters maximizing energy storage density in Si mesoporous electrodes for Li-ion batteries." **Journal of Power Sources** 556 (2023): 232481.
153. Srinivasan, R., KS Ravi Chandran, Y. Chen, and K. An. "In-Operando Neutron Diffraction Investigation of Structural Transitions during Lithiation of Si Electrode in Li-Ion Battery." **Journal of The Electrochemical Society** 169, no. 10 (2022): 100545.
152. Chandran, KS Ravi. "The finding of the reciprocal relationship between fatigue (SN) behavior and fatigue crack growth behavior enabling interconversion of data in structural materials." **Materialia** 25 (2022): 101541.
151. R. Srinivasan, and K. S. Ravi Chandran. "The Strong Effect of Microporous Column Depth on the Lithiation-Delithiation Behavior in Si Electrodes for Li-Ion Cells and the Resistance to Mechanical Damage." **Journal of Electronic Materials** 51 (2022) 857–875
150. Chandran, KS Ravi, and Sarah E. Galyon Dorman. "The nature of specimen-size-effect on fatigue crack growth and net-section fracture mechanics approach to extract the size-independent behavior." **International Journal of Fatigue** 145 (2021): 106088.
149. Vadlamani, B., M. Jagannathan, J. Palmer, and KS Ravi Chandran. "Large effect of structural variations in the columnar silicon electrode on energy storage capacity and electrode structural integrity in Li-ion cells." **Journal of Materials Research** 35, no. 21 (2020): 2976-2988.
148. Ranjan, Ashwani, Rajnesh Tyagi, Vikas Jindal, and K. S. R. Chandran. "Investigation on Wear Characteristics of TiBFe Composites Containing 10 at.% Boron and 10-30 at.% Iron." **Journal of Materials Engineering and Performance** 29 (2020), 6333-6342
147. Degnah, A., J. Du, and KS Ravi Chandran. "CALPHAD Approach and processing of a multicomponent titanium matrix composite for high strength and fracture toughness." **Materials Science and Engineering: A** 781 (2020): 139210.

146. Chandran, KS Ravi. "Fracture mechanics analysis of generalized compact tension specimen geometry using the mechanics of net-section." **Engineering Fracture Mechanics** 222 (2019): 106703.
145. Du, J., V. Jindal, A. P. Sanders, and KS Ravi Chandran. "CALPHAD-guided alloy design and processing for improved strength and toughness in Titanium Boride (TiB) ceramic alloy containing a ductile phase." **Acta Materialia** 171 (2019): 18-30.
144. Rou, Somnaang, and KS Ravi Chandran. "First principles calculation of single-crystal elastic constants of titanium tetraboride (Ti₃B₄) and experimental validation." **Journal of the American Ceramic Society** (2018) DOI: 10.1111/jace.15562
143. Jindal, Vikas, Aditya Sarda, Ahmed Degnah, and KS Ravi Chandran. "Effect of iron & boron content on the Spark Plasma Sintering of Ti-B-Fe alloys." **Advanced Powder Technology** 30, no. 2 (2019): 423-427.
142. Lark, Alexander, Jun Du, and KS Ravi Chandran. "Material design and processing of a new class of titanium boride cermets with tough metallic phases and mechanical properties." **Journal of Materials Research** 33, no. 24 (2018): 4296-4306.
141. Chandran, KS Ravi. "A new exponential function to represent the effect of grain size on the strength of pure iron over multiple length scales." **Journal of Materials Research** 34, no. 13 (2019): 2315-2324.
140. Chandran, KS Ravi. "Net-section based approach for fatigue crack growth characterization using compact tension specimen: Physical correlation of mean stress or stress ratio effects." **International Journal of Fatigue** 124 (2019): 473-482.
139. Kumar, P., and KS Ravi Chandran. "Enhancement of fatigue resistance using the accelerated diffusion/sintering phenomenon near beta transus temperature in Ti-6Al-4V powder metallurgy alloy." **Scripta Materialia** 165 (2019): 1-5.
138. Chandran, KS Ravi. "Mechanics of fatigue crack growth under large-scale plasticity: A direct physical approach for single-valued correlation of fatigue crack growth data." **International Journal of Fatigue** 117 (2018): 299-313.
137. Chandran, KS Ravi. "Fatigue crack growth in bending: Successful correlation of mean stress (stress ratio) effects using the change in net-section strain energy." **Fatigue & Fracture of Engineering Materials & Structures** 41, no. 12 (2018): 2566-2576.
136. Vadlamani, B. S., M. Jagannathan, and KS Ravi Chandran. "Silicon with columnar microporous architecture for ultrahigh total energy-storage capacity and with highly reversible lithiation performance." **ACS Applied Energy Materials** 1, no. 3 (2018): 993-1001.
135. Y. Zhang, KS Ravi Chandran, and H. Z. Bilheux. "Imaging of the Li spatial distribution within V₂O₅ cathode in a coin cell by neutron computed tomography." **Journal of Power Sources** 376 (2018): 125-130.
134. Chandran, KS Ravi. "A novel characterization of fatigue crack growth behavior in metals: The physical relationship between the uncracked section size and the remaining fatigue life." **Materials Science and Engineering: A** 174 (2018) 117-123
133. Chandran, KS Ravi. "Insight on physical meaning of finite-width-correction factors in stress intensity factor (K) solutions of fracture mechanics." **Engineering Fracture Mechanics** 186 (2017): 399-409.

132. J. Du and K. S. Ravi Chandran, "Formation of bulk titanium boride (TiB) nano-ceramic with Fe–Mo addition by electric-field-activated-sintering, **J. Am. Ceram. Soc.** Vol. 100 (2017) 5450-5459
131. Y. Zhang, K. S. Ravi Chandran, H. Z. Bilheux, M. Jagannathan, J. C. Bilheux, "The Nature of Electrochemical Delithiation of Li-Mg Alloy Electrodes: Neutron Computed Tomography and Modeling of Li Diffusion and Delithiation Phenomenon," **Journal of the Electrochem. Soc.**, 164 (2), 2017, A28-A38.
130. K. S. Ravi Chandran, "A physically based constitutive equation to characterize S-N fatigue," **Proc. Seventh Int. Conf. Very High Cycle Fatigue**, Dresden, July 3-4, 2017, Edited by M. Zimmerman and H. J. Christ, Siegener Werkstoffkundliche Berichte, 2017, p. 113
129. K. S. Ravi Chandran, "A physically based constitutive equation for fatigue crack growth," **Proc. Seventh Int. Conf. Very High Cycle Fatigue**, Dresden, July 3-4, 2017, Edited by M. Zimmerman and H. J. Christ, Siegener Werkstoffkundliche Berichte, 2017, p. 148
128. Chandran, KS Ravi. "A new approach to the mechanics of fatigue crack growth in metals: Correlation of mean stress (stress ratio) effects using the change in net-section strain energy." **Acta Materialia** 135 (2017): 201-214.
127. Chandran, KS Ravi. "New approach for the correlation of fatigue crack growth in metals on the basis of the change in net-section strain energy." **Acta Materialia** 129 (2017): 439-449.
126. Chandran, KS Ravi. "A universal functional for the physical description of fatigue crack growth in high-cycle and low-cycle fatigue conditions and in various specimen geometries." **International Journal of Fatigue** 102 (2017): 261-269.
125. F. Cao, and K. S. Ravi Chandran. "The role of crack origin size and early stage crack growth on high cycle fatigue of powder metallurgy Ti-6Al-4V alloy." **International Journal of Fatigue** 102 (2017): 48-58.
124. F. Cao, K. S. Ravi Chandran and P. Kumar, "New Approach to Achieve High Strength Powder Metallurgy Ti-6Al-4V Alloy through Accelerated Sintering at β -Transus Temperature and Hydrogenation-dehydrogenation Treatment," **Scripta Mater.**, Vol. 130, 2016, pp. 22-26
123. K. S. Ravi Chandran, "A physical model and constitutive equations for complete characterization of SN fatigue behavior of metals," **Acta Mater.**, Vol. 121, 2016, p. 85-103
122. J. Du, A. P. Sanders, V. Jindal and K. S. Ravi Chandran, "Rapid In situ formation and densification of nanostructured titanium boride by electric field activated sintering," **Scripta Mater.**, Vol. 123, 2016, pp. 95-99
121. B. Sarma and K. S. Ravi Chandran, "Superior surface hardening by cyclic-phase-change-diffusion (CPCD): Supersaturation of hard boride in titanium subsurface layer," **Scripta Mater.**, Vol. 124, 2016, pp. 121-125
120. K. S. Ravi Chandran, A. P. Sanders, J. Du, L. S. Walker, "Rapid synthesis of nanostructured titanium boride (TiB) by electric field activated reaction sintering," Processing, Properties, and Design of Advanced Ceramics and Composites, Vol. 259, **Ceramic Transactions**, John Wiley & Sons, 2016, p. 187.
119. F. Cao and K. S. Ravi Chandran, "A new Approach to Improve Fatigue Strength of Ti-6Al-4V," **Metall. Mater. Trans. A**, Vol. 47, 2016, 2335-2345

118. P. Kumar, K. S. Ravi Chandran, F. Cao, M. Koopman, and Z. Fang, "The Nature of Tensile Ductility as Controlled by Extreme-Sized Pores in Powder Metallurgy Ti-6Al-4V Alloy" **Metall. Mater. Trans. A**, Vol. 47, 2016, 2150-2161
117. Chandran, KS Ravi. "A physically based universal functional to characterize the mechanism of fatigue crack growth in materials." *Scripta Materialia* 107 (2015): 115-118.
116. K. S. Ravi Chandran, F. Cao, and J. C. Newman. "Fatigue crack growth in miniature specimens: The equivalence of ΔK -correlation and that based on the change in net-section strain energy density." **Scripta Materialia** 122 (2016): 18-21.
115. K. S. Ravi Chandran, "Mechanical Fatigue of Polymers: A New Approach to predict the S-N behavior," **Polymer**, 91, 2016, 222-238
114. P. Sun, Pei, Z. Fang, M. Koopman, Y. Xia, J. Paramore, K.S. Ravi Chandran, Y. Ren, and J. Lu. "Phase Transformations and Formation of Ultra-Fine Microstructure During Hydrogen Sintering and Phase Transformation (HSPT) Processing of Ti-6Al-4V." **Metall. Mater. Trans. A**, Vol. 46, 2015, 5546-5560
113. K. S. Ravi Chandran, A. P. Sanders and J. Du, "Rapid Synthesis of Nanostructured Titanium Boride (TiB) by Electric Field Activated Reaction Sintering," In Processing, Properties, and Design of Advanced Ceramics and Composites, **Ceramic Trans.**, Edited by G. Singh et al., Vol. 259, 2015, p. 187
112. J. D. Paramore, Z. Zak Fang, Pei Sun, M. Koopman, K.S. Ravi Chandran, M. Dunstan, "A powder metallurgy method for manufacturing Ti-6Al-4V with wrought-like microstructures and mechanical properties via hydrogen sintering and phase transformation (HSPT)," **Scripta Mater.**, Vol. 107, 2015, p. 103
111. P. Kumar, K.S. Ravi. Chandran, F. Cao, P. Sun, M Koopman, Z. Z. Fang, Effects of Powder Processing and Sintering on Tensile Ductility of PM Ti-6Al-4V alloy made by Hydrogen Sintering of Titanium Hydride Powders, **Proc. of the 13th world conference on Titanium**, Edited by V. Venkatesh, et al., Wiley-TMS, pp. 1355-1359, 2016.
110. P. Kumar, K. S. Ravi Chandran, A Quantitative Relationship to Predict the Effect of Extreme-Sized Pores on Tensile Ductility of Powder Metallurgy Ti-6Al-4V alloy, **Proc. of the 13th world conference on Titanium**, Edited by V. Venkatesh et al., Wiley-TMS, pp. 1441-1446, 2016.
109. F. Cao, P. Kumar, M. Koopman, C. L. Lin, Zak Z. Fang, K. S. Ravi Chandran, "Understanding Competing Fatigue Mechanisms in a Powder Metallurgy Ti-6Al-4V Alloy: Role of Crack Initiation and Duality of Fatigue Response," **Mater. Sci. Eng. A**, Vol. A630, 2015, p. 139
108. F Cao, KS Chandran, P Kumar, P Sun, M Koopman, Z.Z. Fang, Improved Fatigue Performance of PM Ti-6Al-4V Alloy Processed By Hydrogen Sintering and Phase Transformation of TiH₂ Powders, **Proc. of the 13th World Conference on Titanium**, edited by V. Venkatesh et al., 2016, John Wiley & Sons, pp. 1465-1469.
107. K. S. Ravi Chandran, "Joule Heating of Graphene and Nanowires: Analytical Model for Current-induced Transient Temperature Evolution and Substrate Effects," **Int. J. Heat and Mass Transfer**, Vol. 88, 2015, p.14
106. P. Sun, Z. Fang, M. Koopman, J. Paramore, K. S. Ravi Chandran, Y. Ren, and J. Lu. "An experimental study of the (Ti-6Al-4V)-xH phase diagram using in situ synchrotron XRD

and TGA/DSC techniques," **Acta Mater.**, 84 (2015): 29-41

105. M. Jagannathan, K. S. Ravi Chandran, "Analytical modeling and simulation of electrochemical charge/discharge behavior of Si thin film negative electrodes in Li-ion cells," **Journal of Power Sources**, Vol. 247, 2014, pp. 667-675
104. B. Vadlamani, K. An, M. Jagannathan, K.S.R. Chandran, "An In-Situ Electrochemical Cell for Neutron Diffraction Studies of Phase Transitions in Small Volume Electrodes of Li-Ion Batteries," **Journal of The Electrochem. Soc.**, 161 (10), 2014, A1731-A1741
103. M. Jagannathan, K. S. Ravi Chandran, "Electrochemical Charge/Discharge Behavior and Phase Transitions during Cell Cycling of Li (Mg) Alloy Anodes for High Capacity Li Ion Batteries," **Journal of The Electrochem. Soc.**, 160, 2013 (10), A1922-A1926
102. S. Madtha, K. S. Ravi Chandran, "Reactive-Sinter-Processing and Attractive Mechanical Properties of Bulk and Nanostructured Titanium Boride," **J. Am. Ceram. Soc.**, Vol. 59, 2012, pp. 117-125
101. S. Madtha, C. Lee and K. S. Ravi Chandran, "Physical and mechanical properties of nanostructured titanium boride," **J. Am. Ceram. Soc.**, Vol. 91, 2008, pp. 1319-1321
100. B. Sarma and K. S. Ravi Chandran, "Kinetics of super-hard boride layer growth on titanium," **Ceramics International**, Vol. 38, 2012, pp. 6795-6805
99. B. Sarma and K. S. Ravi Chandran, "Accelerated kinetics of surface hardening by diffusion near phase transition: growth mechanism of boride layers on titanium," **Acta Mater.**, Vol. 59, 2011, pp. 4216-4228
98. K. S. Ravi Chandran, "Competing failure modes and complex S-N curves in fatigue of structural materials," **Int. J. Fatigue**, Vol. 32, 2010, pp. 482-491
97. M. Oja, K. S. Ravi Chandran and R. Tryon, "Orientation imaging microscopy of fatigue crack formation in Waspalloy: Crystallographic conditions for crack nucleation," **Int. J. Fatigue**, Vol. 32, 2010, pp. 551-556
96. D. L. Davidson, R. Tryon, M. Oja and K. S. Ravichandran, "Fatigue crack initiation in Waspalloy at 20C," **Metallurgical and Materials Transactions**, Vol. 38A, 2007, pp. 2214-2225
95. Y. Nakamura, T. Sakai, H. Hirano and K. S. Ravi Chandran, "Effect of alumite surface treatments on long-life fatigue behavior of a cast aluminum in rotating bending," **Int. J. Fatigue**, Vol. 32, 2010, pp. 621-626
94. C. Lee, A. Sanders, N. Tikekar and K. S. Ravi Chandran "Tribology of titanium boride-coated titanium balls against alumina ceramic: Wear, friction, and micromechanisms. **Wear**, Vol. 265, 2008, pp. 375-386
93. C. Lee, N. Tikekar, K. S. Ravi Chandran and A. Sanders "Wear resistance of titanium boride coated titanium alloy against alumina," in Medical Device Materials IV; **Proc. from the Materials and Processes for Medical Devices Conference 2007**, Palm Desert, CA, Edited by J. Gilbert, ASM International, pp. 171-176
92. A. Sanders, N. Tikekar, C. Lee, K. S. Ravi Chandran and "Challenges in achieving surface texture in titanium surface hardened with titanium boride layers," in Medical Device Materials IV; **Proc. from the Materials and Processes for Medical Devices Conference 2007**, Palm Desert, CA, Edited by J. Gilbert, ASM International, pp. 194-199

91. A. P. Sanders, N. Tikekar, C. Lee and K. S. Ravi Chandran, Surface hardening of titanium articles with titanium boride layers and its effects on substrate shape and surface texture," **J. Manu. Sci. and Eng.**, Vol. 131, 2009, 031001-1-8
90. P. Chandrasekar, V. Balusamy, K. S. Ravi Chandran and H. Kumar, "Laser surface hardening of Ti-TiB metal matrix composites," **Scripta Materialia**, Vol. 56, 2007, pp. 641-644
89. K. S. Ravi Chandran and G. T. Cashman, "Competing failure modes in fatigue and the consequent S-N curve shapes," **Proc. Fourth Int. Conf. Very High Cycle Fatigue**, edited by J. E. Allison et al., TMS Publication, 2007, pp. 91-99
88. N. Tikekar, K. S. Ravi Chandran and A. Sanders, "Nature of growth of dual titanium boride layers with nanostructured TiB whiskers on the surface of titanium," **Scripta Materialia**, Vol. 57, 2007, pp. 273-376
87. N. Tikekar, K. S. Ravi Chandran and A. Sanders, "Novel Double-layered Titanium Boride Coatings on Titanium: Kinetics of Boron Diffusion and Coating Morphologies," **TMS Letters**, Vol. 3, 2006, pp. 87-88
86. G. Constantinides, K. S. Ravi Chandran, F.-J. Ulm and K. J. Van Vliet, "Grid Indentation Analysis of Composite Microstructure and Mechanics: Principles and Validation," **Materials Science and Engineering A**, Vol. 430, 2006, pp. 189-202
85. K. Panda and K. S. Ravi Chandran, "Determination of Elastic Properties of Titanium Diboride (TiB₂) from first principles using FLAPW implementation of the density functional theory," **Computational Materials Science**, Vol. 35, 2006, pp. 134-150
84. K. Panda and K. S. Ravi Chandran, "First Principles Determination of Elastic Constants and Chemical Bonding of Titanium Boride (TiB) on the basis of Density Functional Theory," **Acta Materialia**, Vol. 54, 2006, pp. 1641-1657
83. K. S. Ravi Chandran, "Duality of metal fatigue caused by competing failure modes and Poisson defect statistics," **Nature Materials**, Vol. 4, 2005, pp. 303-308
82. K. S. Ravi Chandran and S. K. Jha, "Duality of the S-N Fatigue Curve Caused by Competing Failure Modes in a Titanium Alloy and the Role of Poisson Defect Statistics," **Acta Materialia**, Vol. 53, 2005, pp. 1867-1881
81. K. S. Ravi Chandran, and D. Miracle, "Titanium-Boron Alloys and Composites: Processing, Properties and Applications," **JOM**, Vol. 56, No. 5, 2003, p. 32
80. S. Kumari, N. Eswara Prasad, K. S. Ravi Chandran and G. Malakondaiah, "High Temperature Deformation Behavior of Ti-TiB_w In-Situ Metal Matrix Composites," **JOM**, Vol. 56, No. 5, 2003, pp. 51-55
79. K. S. Ravi Chandran and Z. Z. Fang, "Microstructure Design of Advanced Materials through Microelement Models: WC-Co Cermets and Their Novel Architectures," **Nano and Microstructure Design of Advanced Materials**, edited by M. A. Meyers et. al, A Commemorative Volume on Professor G. Thomas' Seventieth Birthday, 2003, pp. 157-172
78. K. Panda and K. S. Ravi Chandran, "Synthesis of Ductile Ti-TiB composites with β -Ti alloy matrix," **Metallurgical and Materials Transactions**, Vol. 34A, 2003, pp. 1371-1385
77. K. Panda and K. S. Ravi Chandran, "Synthesis of Ti-TiB Functionally Graded Materials," **Metallurgical and Materials Transactions**, Vol. 34A, 2003, pp. 1993-2003

76. S. K. Jha and K. S. Ravi Chandran, "An unusual fatigue phenomenon: duality of the S-N curve in the beta-titanium alloy Ti-10V-2Fe-3Al," **Scripta Materialia**, Vol. 48, 2003, pp. 1207-1212
75. K. S. Ravi Chandran and I. Barsoum, "Stress Intensity Factor Solutions for Finite-Width Functionally Graded Materials," **International Journal of Fracture**, Vol. 121, 2003, pp. 183-203
74. I. Barsoum and K. S. Ravi Chandran, "Approximate Stress Intensity Factors for a Crack in the Middle Layer of a Three Layer Laminate," **Engineering Fracture Mechanics**, Vol. 70, 2003, pp. 2015-2031
73. S. Aich and K. S. Ravi Chandran, "Synthesis TiB Whisker Coating on Titanium Surfaces by Solid State Diffusion," **Metallurgical and Materials Transactions**, Vol. 33A, 2002, pp. 3489-3498
72. K. S. Ravi Chandran and I. Barsoum, "Fracture Mechanics of Functionally Graded Materials (FGMs): Stress Intensity Factor Solutions and the Nature of Crack Arrest," **Mechanisms and Mechanics of Fracture: Proceedings of the Symposium in the Honor of Prof. J. F. Knott**, edited by W. O. Soboyejo, J. J. Lewandowski and R. O. Ritchie, TMS-AIME Publication, 2002, pp. 155-162
71. K. S. Ravi Chandran and K. Panda, "Discontinuously Reinforced Titanium Composites with TiB Reinforcements on the Horizon," **Advanced Materials and Processes**, Vol. 160, No.10, 2002, pp. 59-62
70. K. Panda and K. S. Ravi Chandran, "Synthesis of a Functionally Graded Material System based on the Ti-TiB composites," **Proceedings of International Conference on Functionally Graded Materials: Technology Leveraged Applications**, Metal Powder Industries Federation, PA, 2002, edited by R. G. Ford and R. H. Hershberger, pp. 34-49
69. R. E. Dutton, R. Wheeler, K. S. Ravichandran and K. An, "Effect of Heat Treatment on the Thermal Conductivity of Plasma-sprayed Thermal Barrier coatings," **J. Thermal Spray Technology**, Vol. 9, 2002, pp. 204-209
68. P. S. Shankar and K. S. Ravi Chandran, "Fatigue Behavior of Beta Titanium Alloy: Effects of Aging and Mechanisms of Crack Nucleation," **Fatigue 2002: Proceedings of the Eighth International Fatigue Congress**, edited by A. F. Blom, Vol. 3, 2002, pp. 1789-1796
67. S. K. Jha and K. S. Ravi Chandran, "Effect of Secondary Alpha in Beta Phase on the Fatigue of Beta Titanium Alloy," **Fatigue 2002: Proceedings of the Eighth International Fatigue Congress**, edited by A. F. Blom, Vol. 3, 2002, pp. 1815-1822
66. K. S. Ravi Chandran, S. K. Jha and P. S. Shankar, "Fatigue of Beta Titanium Alloys: Crack Initiation, Growth and Fatigue Life," **Fatigue 2002: Proceedings of the Eighth International Fatigue Congress**, edited by A. F. Blom, Vol. 3, 2002, pp. 1751-1822
65. S. K. Jha and K. S. Ravi Chandran, "An Unusual Fatigue Phenomenon: Duality of the S-N Curve in the Beta Titanium Alloy," **Fatigue 2002: Proceedings of the Eighth International Fatigue Congress**, edited by A. F. Blom, Vol. 3, 2002, pp. 1841-1848
64. K. S. Ravichandran and Xu-Dong Li, "Fracture Mechanical Character of Small Cracks in Polycrystalline Materials: Concept and Numerical K Calculations," **Acta Materialia**, Vol. 48, 2000, pp. 525-540

63. S. K. Jha and K. S. Ravichandran, "Effect of Aging on the Mean Stress Dependence of Fatigue Crack Growth Behavior in a Beta Titanium Alloy: Ti-10V-2Fe-3Al," **Metallurgical and Materials Transactions**, Vol. 31A, 2000, pp. 703-714
62. F. H. Kavarana, K. S. Ravichandran and S. S. Sahay, "Nanoscale Steel-Brass Multilayer Laminates Made by Cold Rolling: Microstructure and Tensile Properties," **Scripta Materialia**, Vol. 42, 2000, pp. 947-954
61. S. S. Sahay, K. S. Ravichandran, R. Atri, B. Chen and J. Rubin, "Evolution of Microstructure and Phases in In-situ Processed Ti-TiB Composites Containing High Volume Fractions of TiB Whiskers," **J. Material Research**, Vol. 14, 1999, pp. 4214-4223
60. R. Atri, K. S. Ravichandran and S. K. Jha, "Elastic Properties of In-situ Processed Ti-TiB Composites Measured by Impulse Excitation of Vibration," **Materials Science and Engineering**, Vol. A271, 1999, pp. 150-159
59. K. S. Ravichandran, K. An, R. E. Dutton and S. L. Semiatin, "Microstructure and Thermal Conductivity of Layered Thermal Barrier Coatings Processed by Plasma Spray and Physical Vapor Deposition Techniques," in **Thermal Barrier Coatings**, AGARD Report 823, Proc. 85th Meeting of AGARD Structures and Materials Panel, North Atlantic Treaty Organization, 1998, 14-1-14-12.
58. K. S. Ravichandran, K. An, R. E. Dutton and S. L. Semiatin, "Thermal Conductivity of Plasma Sprayed Monolithic and Multilayer Coatings of Al₂O₃ and ZrO₂," **Journal of the American Ceramic Society**, Vol. 82, 1999, pp. 673-682
57. K. An, K. S. Ravichandran, R. E. Dutton and S. L. Semiatin, "Microstructure, Texture and Thermal Conductivity of Single and Multilayer Coatings of Al₂O₃ and ZrO₂ Made by Physical Vapor Deposition" **Journal of the American Ceramic Society**, Vol. 82, 1999, pp. 399-406
56. Xu-Dong Li and K. S. Ravichandran, "Numerical Calculation of Stress Intensity Factor Variation for a Small Elliptical Fatigue Crack: The Effect of Local Anisotropy Induced by Grain Orientations," **Proceedings of the Seventh International Fatigue Congress**, edited by X. R. Wu and Z. G. Wang, Higher Education Press, EMAS Ltd., West Midlands, UK, Vol. 1, 1999, pp. 399-404
55. R. Atri and K. S. Ravichandran, "Dynamic Modulus and Poisson's Ratio Measurements of Ti-TiB Composites by Impulse Excitation," **Proceedings: Nondestructive Evaluation and Material Properties IV**, edited by P. K. Liaw, R. E. Green and R. Thompson, TMS, Warrendale, PA, 1999, pp. 37-44
54. W. A. Gooch, B. H. C. Chen, M. S. Burkins, R. Palicka, J. Rubin and K. S. Ravichandran, "Development and Ballistic Testing of a Functionally Gradient Ceramic/Metal Applique," **Proc. Fifth International Symposium on Functionally Graded Materials**, edited by W. A. Kaysser, Materials Science Forum Vols. 308-311, Trans Tech Publications, Switzerland, 1999, pp. 614-621
53. K. S. Ravichandran, J. M. Larsen and Xu-Dong Li, "Significance of Crack Shape or Aspect Ratio on the Behavior of Small Fatigue Cracks," **Small Fatigue Cracks: Mechanics, Mechanisms and Applications**, Proceedings edited by K. S. Ravichandran, R. O. Ritchie and Y. Murakami, Elsevier Science Ltd., 1999, pp. 95-108
52. Xu-Dong Li and K. S. Ravichandran, "The Role of Crystal Anisotropy on Stress Intensity Factor Distribution of Small Elliptical Cracks," **Small Fatigue Cracks: Mechanics**,

Mechanisms and Applications, Proceedings edited by K. S. Ravichandran, R. O. Ritchie and Y. Murakami, Elsevier Science Ltd., 1999, pp. 85-92

51. S. K. Jha and K. S. Ravichandran, "Mechanisms of Fatigue Crack Nucleation at Surface and Subsurface Regions and Their Effect on Fatigue Life of Ti-10V-2Fe-3Al", **Small Fatigue Cracks: Mechanics, Mechanisms and Applications**, Conference Proceedings edited by K. S. Ravichandran, R. O. Ritchie and Y. Murakami, Elsevier Science Ltd., 1999, pp. 187-197
50. K. S. Ravichandran and S. K. Jha, "Mean Stress (tensile) Effects on Fatigue Crack Growth Behavior of Some Structural Titanium Alloys: An overview of Microstructural Issues," **Fatigue Behavior of Titanium Alloys**, edited by R. R. Boyer, D. Eylon and G. Lutjering, The Minerals, Metals & Materials Society, 1999, pp. 57-73
49. P. S. Shankar and K. S. Ravichandran, "Fatigue Response and Micromechanisms of Crack Initiation in Ti-10V-2Fe-3Al Titanium Alloy," **Fatigue Behavior of Titanium Alloys**, edited by R. R. Boyer, D. Eylon and G. Lutjering, The Minerals, Metals & Materials Society, 1999, pp. 135-147
48. S. K. Jha and K. S. Ravichandran, "Effect of Aging on the Dependence of Fatigue Crack Growth Behavior on Mean Stress (Stress Ratio) in the beta Titanium Alloy: Ti-10V-2Fe-3Al," **Fatigue Behavior of Titanium Alloys**, edited by R. R. Boyer, D. Eylon and G. Lutjering, The Minerals, Metals & Materials Society, 1999, pp. 149-159
47. K. S. Ravichandran, "Three-Dimensional Crack-Shape Effects During the Growth of Small Surface Cracks Under Fatigue in a Titanium-Base Alloy," **Fracture and Fatigue of Engineering Materials and Structures**, Vol. 20, 1997, p. 1423
46. K. S. Ravichandran, "Effects of Crack Aspect Ratio on the Behavior of Small Surface Cracks in Fatigue. Part I: Simulation," **Metallurgical and Materials Transactions**, Vol. 28A, 1997, p. 149
45. K. S. Ravichandran and J. M. Larsen, "Effects of Crack Aspect Ratio on the Behavior of Small Surface Cracks in Fatigue. Part II: Experiments on a Titanium (Ti-8Al) Alloy," **Metallurgical and Materials Transactions**, Vol. 28A, 1997, p. 157
44. K. S. Ravichandran, S. S. Sahay and J. G. Byrne, "Processing of Microscale Brass/Steel Multilayer Composites and Tensile Properties," **Processing and Fabrication of Advanced Materials V**, edited by T. S. Srivatsan and J. J. Moore, The Minerals, Metals & Materials Society, 1996, p. 59
43. K. S. Ravichandran, R. E. Dutton, S. L. Semiatin and K. An, "Microstructure and Thermal Conductivity of Multilayer Thermal Barrier Coatings Processed by Plasma Spray and Electron Beam Physical Vapor Deposition Techniques," **Layered Materials for Structural Applications**, Materials Research Society Symposium Proceedings, Vol. 434, edited by J. J. Lewandowski, C. H. Ward, M. R. Jackson and W. H. Hunt, Jr., 1996, p. 27
42. K. S. Ravichandran, "Creep of Cr₂Hf+Cr In-Situ Intermetallic Composites," **Scripta Materialia**, Vol. 34, 1996, p. 1819
41. K. S. Ravichandran and J. M. Larsen, "Influence of Mode of Initiation on the Growth of Small Surface Cracks in Titanium Aluminides," **International Journal of Fatigue**, Vol. 18, 1996, p. 9
40. K. S. Ravichandran, S. Sahay and J. G. Byrne, "Strength and Ductility of Brass/Steel Microscale Multilayer Composites," **Scripta Materialia**, Vol. 35, 1996, p. 1135

39. S. S. Sahay, K. S. Ravichandran and J. G. Byrne, "Nanoscale Brass/Steel Multilayer Composites Produced by Cold Rolling," **Metallurgical and Materials Transactions**, Vol. 27A, 1996, p. 2383
38. K. S. Ravichandran, "Thermal Stresses in a Functionally Graded Material System," **Materials Science and Engineering**, Vol. A201, 1995, p. 269
37. K. S. Ravichandran, "Material for Teaching Alloy Design for Fracture Resistance" **Journal of Materials Education**, Vol. 17, 1995, p. 137
36. K. S. Ravichandran, "Simple Models of Deformation Behavior of Two-Phase Composites," **High Performance Composites: Commonalty of Phenomena**, edited by K. K. Chawla, P. K. Liaw and S. G. Fishman, TMS-AIME Publication, 1994, p. 403
35. K. S. Ravichandran, D. B. Miracle and M. G. Mendiratta, "Fracture Toughness of Cr₂Hf+Cr In-situ Intermetallic Composites," **Intermetallic Composites III**, MRS Symposium Proceedings Vol. 350, 1994, p. 249
34. K. S. Ravichandran, D. B. Miracle and M. G. Mendiratta, "Microstructure and Mechanical Behavior of Cr₂Hf+Cr In-situ Intermetallic Composites," **Metallurgical and Materials Transactions**, Vol. 27A, 1996, p. 2583
33. K. S. Ravichandran, "Deformation Behavior of Interpenetrating Phase Composites," **Composites Science & Technology**, Vol. 52, 1994, p. 541
32. K. S. Ravichandran, "A Simple Model for the Deformation of Two Phase Composites," **Acta Metallurgica et Materialia**, Vol. 42, 1994, p. 1113
31. K. S. Ravichandran, "Elastic Properties of Two Phase Composite Materials," **Journal of American Ceramic Society**, Vol. 77, 1994, p. 1178
30. K. S. Ravichandran and V. Seetharaman, "Steady State Creep behavior of Two Phase Composites," **Acta Metallurgica et Materialia**, Vol. 41, 1993, p. 3351
29. K. S. Ravichandran, "Fracture Toughness of Two Phase Composites Based on WC-Co Cermets," **Acta Metallurgica et Materialia**, Vol. 42, 1994, p. 143
28. K. S. Ravichandran and J. M. Larsen, "An Approach to Measure the Shapes of Three-Dimensional Surface Cracks During Fatigue Crack Growth," **Fatigue and Fracture of Engineering Materials and Structures**, Vol. 16, 1993, p. 909
27. K. S. Ravichandran, "The Mechanics of Toughness Development in Ductile Phase Reinforced Brittle Matrix Composites," **Acta Metallurgica et Materialia**, Vol. 40, 1992, p. 1009
26. K. S. Ravichandran, "Effects of Specimen Geometry on Toughness Development in Fiber Reinforced Brittle Matrix Composites," **Scripta Metallurgica et Materialia**, Vol. 25, 1991, p. 2645
25. K. S. Ravichandran, "A Survey of Toughness in Ductile Phase Composites," **Scripta Metallurgica et Materialia**, Vol. 26, 1992, p. 1389
24. K. S. Ravichandran and E. S. Dwarakadasa, "A Theoretical Model for the Effects of Grain Size on the Threshold for Fatigue Crack Growth and Crack Closure," **Acta Metallurgica et Materialia**, Vol. 39, 1991, p. 1331
23. K. S. Ravichandran, "A Rationalization of Fatigue Thresholds in Pearlitic Steels using a Theoretical Model," **Acta Metallurgica et Materialia**, Vol. 39, 1991, p. 1343

22. K. S. Ravichandran, "Near Threshold Fatigue Crack Growth Behavior of a Titanium Alloy: Ti-6Al-4V," **Acta Metallurgica et Materialia**, Vol. 39, 1991, p. 401
21. K. S. Ravichandran, E. S. Dwarakadasa and D. Banerjee, "Mechanisms of Cleavage during Fatigue Crack Growth in Ti-6Al-4V," **Scripta Metallurgica et Materialia**, Vol. 25, 1991, p. 2115
20. K. S. Ravichandran and J. M. Larsen, "Microstructure and Crack Shape Effects on the Growth of Small Cracks in Ti-24Al-11Nb," **Proc. Int. Conf. on High Temperature Aluminides and Intermetallics, Materials Science and Engineering**, Vol. A152, 1992, p. 499
19. K. S. Ravichandran, "A Theoretical Model for Roughness Induced Crack Closure," **International Journal of Fracture**, Vol. 44, 1990, p. 97
18. K. S. Ravichandran, "Further Results on a Theoretical Model for Roughness Induced Crack Closure: Effects of Yield Strength," **International Journal of Fracture**, Vol. 44, 1990, p. R23
17. K. S. Ravichandran and J. M. Larsen, "Mode of Initiation on the Growth Behavior of Small Fatigue Cracks in Titanium Aluminide Alloys," **Fatigue 93, Proc. Int. Conference on Fatigue and Fatigue Thresholds**, Vol. 2, 1993, p. 785
16. K. S. Ravichandran and J. M. Larsen, "Microstructural Aspects of Growth of Small and Large Fatigue Cracks in Ti-24Al-11Nb Titanium Aluminide," **Fracture Mechanics, 22nd Symposium, ASTM STP 1131**, 1992, p. 727
15. K. S. Ravichandran and E. S. Dwarakadasa, "Micromechanisms of Fatigue Crack Growth in a High Strength Steel," **Transactions of the Indian Institute of Metals**, Vol. 112, 1991, pp. 64
14. K. S. Ravichandran, "Fracture Mode Transitions During Fatigue Crack Growth in Ti-6Al-4V Alloy," **Scripta Metallurgica**, Vol. 24, 1990, p. 1275
13. K. S. Ravichandran, "Fatigue Crack Growth Behavior Near Threshold in Ti-6Al-4V alloy," **Fatigue 90, Proc. of 4th Int. Conf. on Fatigue and Fatigue Thresholds**, Vol. III, 1990, p. 1345
12. K. S. Ravichandran and D. Banerjee, "Effects of Microstructural Morphology on the Near Threshold Fatigue Crack Growth Characteristics on a Near Alpha Titanium Alloy: Ti-6Al-3Mo-1.5Zr-0.25Si," **Fatigue 90, Proc. of 4th Int. Conf. on Fatigue and Fatigue Thresholds**, Vol. III, 1990, p. 1351
11. K. S. Ravichandran and E. S. Dwarakadasa, "Effects of Temper Level on the Dependence of Fatigue Threshold and Crack Closure on Prior Austenitic Grain Size," **Metallurgical Transactions**, Vol. 21A, 1990, p. 3171
10. K. S. Ravichandran, "Fatigue Crack Closure as Influenced by Microstructure in Ti-6Al-4V," **Scripta Metallurgica**, Vol. 24, 1990, p. 1559
9. M. Larsen, J. R. Jira and K. S. Ravichandran, "Measurement of Small Cracks by Photomicroscopy: Experiments and Analysis," **ASTM Symp. on Small-Crack Test Methods, ASTM STP 1149**, 1992, p. 57
8. K. S. Ravichandran and E. S. Dwarakadasa, "Fatigue Crack Growth Transitions in Ti-6Al-4V alloy," **Scripta Metallurgica**, Vol. 23, 1989, p. 1685

7. K. S. Ravichandran and E. S. Dwarakadasa, "Mechanisms of Intergranular Fracture during Fatigue Crack Growth in a Quenched and Tempered Steel," **Advances in Fracture Research, Proc. 7th Int. Conf. on Fracture**, ICF7, Vol. 6, 1989, p. 3979
6. K. S. Ravichandran, H. C. Venkat Rao, E. S. Dwarakadasa and C. G. Krishnadas Nair, "Microstructural Effects and Crack Closure during Near Threshold Fatigue Crack Growth in a High Strength Steel," **Metallurgical Transactions**, Vol. 8A, 1987, p. 865
5. K. S. Ravichandran, E. S. Dwarakadasa and Kishore, "Near Threshold Fatigue Crack Growth in a High Strength Steel: The Effect of Prior Austenitic Grain Size," **Zeitschrift fur Metallkunde**, Vol. 78, 1987, p. 32
4. K. S. Ravichandran, T. S. Panchapagesan, Kishore and E. S. Dwarakadasa, "Effects of Crack Closure on the Grain Size Dependence of Fatigue Threshold in a High Strength Steel," **Scripta Metallurgica**, Vol. 21, 1987, p. 919
3. K. S. Ravichandran and E. S. Dwarakadasa, "Effects of Tempered Structure on the Near Threshold FCG Behavior in a High Strength Steel," **Engineering Fracture Mechanics**, Vol. 28, 1987, p. 435
2. K. S. Ravichandran, E. S. Dwarakadasa and Kishore, "Some Considerations on the Occurrence of Intergranular Fracture During Fatigue Crack Growth in Steels," **Materials Science and Engineering**, Vol. 83, 1986, p. L11
1. K. S. Ravichandran and E. S. Dwarakadasa, "An Overview of Structure-Property Relationships in Advanced Aerospace Aluminum Alloys," **Journal of Metals**, Vol. 39, 1987, p. 28

IX.4. INVITED PRESENTATIONS

1. K. S. Ravi Chandran, "Advances in Refractory Alloys," Department of Metallurgical Engineering, **PSG Institute of Technology, Coimbatore, IN**, 5 Jan 2024
2. K. S. Ravi Chandran, "New Directions in Fatigue and Fracture Mechanics," Department of Metallurgical Engineering, **Indian Institute of Technology, Varanasi, IN**, 12 Jan 2024
3. K. S. Ravi Chandran, "Size Effects in Fracture Mechanics," Department of Mechanical Engineering, **Indian Institute of Technology, Chennai, IN**, 18 Jan 2024
4. K. S. Ravi Chandran, "Designing Novel Multicomponent Niobium Alloys for High Temperature: Design & Manufacturing," **ARPA_E Review Meeting**, Atlanta, Feb 2023
5. K. S. Ravi Chandran, "Designing Novel Multicomponent Niobium Alloys for High Temperature: Design & Manufacturing," **ARPA_E Review Meeting**, Atlanta, Mar 2022
6. K. S. Ravi Chandran, Contributions of R. F. Mehl (Carnegie-Mellon University; 1932-76) to Metal Fatigue," **A LMD Symposium honoring J. W. Jones**, 2022 TMS Annual Meeting & Exhibition, Anaheim, CA, March 2022.
7. K. S. Ravi Chandran, "Discovery of a Reciprocal Relationship in Fatigue between Stress-life (S-N) Behavior and Fatigue Crack Growth Behavior" **Fatigue in Materials: Fundamentals, Multiscale Characterizations and Computational Modeling**, 2022 TMS Annual Meeting & Exhibition, Anaheim, CA, March 2022.
8. K. S. Ravi Chandran, "CALPHAD based Alloy Design of Multiclass materials," **Department of Materials Engineering, Indian Institute of Science**, 9 December 2018

9. K. S. Ravi Chandran, "New Advances and Physical Models of Fatigue," **Department of Materials Science and Engineering, Indian Institute of Technology**, 2 Jan 2019
10. K. S. Ravi Chandran, "Advances in Refractory Alloys," ARPA-E Ultimate workshop on Ultrahigh Temperature Materials, Seattle, WA. November 2019
11. K. S. Ravi Chandran, Fatigue Performance of AM Titanium: A Critical Analysis of PM Ti-6Al-4V Fatigue Behavior & Relevance to Additive Manufacturing, **Symposium on Additive Manufacturing of Metals**, MS&T 2017, Pittsburgh, 14 August 2017.
12. K. S. Ravi Chandran, "A Physically Based Law for S-N Fatigue Behavior of Metals," Invited Presentation, **Fatigue in Materials: Fundamentals, Multiscale Modeling and Prevention**, 2017 TMS Annual Meeting & Exhibition, San Diego, March 2017.
13. K. S. Ravi Chandran, The Complexity of Fatigue Behavior as Determined by Competing Failure Mechanisms in Metallic Materials, **Fatigue and Microstructure: A Symposium on Recent Advances, MS&T 2011**, Columbus, Oct. 18, 2011
14. K. S. Ravi Chandran, "Competing Failure Modes in Fatigue," Engineering Materials Laboratory, **GE Aviation**, Cincinnati, July 2011
15. K. S. Ravi Chandran, "Competing Failure Modes in Fatigue," **Air Force Research Laboratory, WPAFB**, July 2011
16. K. S. Ravi Chandran, "New advances in titanium research and development in USA," **Defense Metallurgical Research Laboratory**, Hyderabad, India. August 2008.
17. K. S. Ravi Chandran, "Strange aircraft accidents and unusual fatigue failures," **Int. Conf. Recent Advances in Materials Processing**, December 2006, PSG Institute of Technology, Coimbatore, India
18. K. S. Ravi Chandran, "Advances in Biomedical Implants," **Int. Conf. Recent Advances in Materials Processing**, December 2006, PSG Institute of Technology, Coimbatore, India
19. **Special Lecture**, K. S. Ravi Chandran, Computational Determination of Anisotropic Elastic Constants of Titanium Borides, Dept. of MSE, **Case Western Reserve University**, Cleveland, OH, September 2004
20. K. S. Ravi Chandran, "Computationally determined Anisotropic Elastic Constants of TiB," Presented in **Ab-Initio Computer Simulations of Mechanical Behavior, WIEN2K Workshop**, Penn State University, June 2004
21. K. S. Ravi Chandran, "New advances in titanium research, development and applications for transportation and defense industry, **Tata Research Design Development Center**, Pune, India, April 2004
22. K. S. Ravi Chandran, "New advances in titanium research, development and applications for transportation and defense industry, **Indian Institute of Technology**, Mumbai, India, April 2004
23. K. S. Ravi Chandran, "In situ titanium metal matrix composites and graded structures as affordable material solutions," **Low Cost Titanium Workshop: Applications for Ship and Ground Vehicle Structures**, December 2003
24. K. S. Ravi Chandran **Gordon Laboratory Lecture**, Titanium Based Functionally Graded Materials: Synthesis and Fracture Mechanisms, **Cambridge University**, UK, May 2002

25. K. S. Ravi Chandran, "Fatigue of Beta Titanium Alloys: Role of Microstructure on Crack Initiation, Growth and Fatigue Life," Keynote Presentation in **Fatigue 2002: Eight International Fatigue Congress**, Stockholm, Sweden, June 2002
26. K. S. Ravi Chandran, "Mechanical Behavior of Ti-TiB Functionally Graded Materials," Department of Materials Science and Engineering, **University of Tennessee**, Knoxville, August 2001
27. K. S. Ravi Chandran, "Micromechanics of Small Fatigue Cracks," Department of Mechanical and Aerospace Engineering, **University of Arizona**, Tucson, March 2001
28. K. S. Ravi Chandran, "Micromechanics of Fatigue of Small Cracks in Structural Metals," **GE Research and Development Center**, Schenectady, NY, June 2000
29. K. S. Ravichandran, "Functionally Graded Materials in the Ti-B System," Department of Metallurgy, **Indian Institute of Science**, India, July 1999
30. K. S. Ravichandran, "Mechanical Behavior Issues in Functionally Graded Materials in the Ti-B System," **Defense Metallurgical Research Laboratory**, India, July 1999
31. K. S. Ravichandran, K. An, R. E. Dutton and S. L. Semiatin, "Microstructure and Thermal conductivity of Layered Thermal Barrier Coatings Processed by Plasma Spray and Physical Vapor Deposition Techniques," **Workshop on Thermal Barrier Coatings 85th Meeting of AGARD Structures and Materials Panel**, Aalborg, Denmark, October 15-16, 1997
32. K. S. Ravichandran, "Progress in Understanding the Thermal Conductivity of Thermal Barrier Coatings," **Operhall Research Center, Howmet Corporation**, White Hall, MI, May 1996
33. K. S. Ravichandran, "Thermal Conductivity of Thermal Barrier Coatings," **Materials Directorate, Wright Patterson Air Force Base**, OH, October 1995
34. K. S. Ravichandran, "Mechanism Related Issues in Cr-Hf intermetallic Composites," **DOE Workshop on High Temperature Laves Phases, Oak Ridge National Laboratory**, May 1996, Knoxville, TN
35. K. S. Ravichandran, "Issues on Mechanical Behavior of Some Intermetallic & Composite materials," **Department of Materials Science & Engineering, Lehigh University**, PA, 9 March 1995
36. K. S. Ravichandran, "Mechanical Behavior of Advanced Intermetallic Materials," **Department of Metallurgy & Institute of Materials Science, University of Connecticut**, Storrs, 16 September 1994
37. K. S. Ravichandran, "Three-Dimensional Aspects of Surface Cracks in Fatigue," **Department of Metallurgy, Indian Institute of Science, Bangalore, India**, 22 December 1994

IX.5. OTHER PRESENTATIONS

38. H. Alnasser, T. Sanders and K. S. Ravi Chandran, "Tensile Properties and Processing induced Variability in Laser Additive Manufactured Ti-6Al-4V Cellular Structure" Symposium: **Additive Manufacturing of Metals: Microstructure and Material Properties, MS&T 2018**, Columbus, OH.
39. P. Kumar and K. S. Ravi Chandran, "Accelerated Sintering of Powder Metallurgy (PM) Ti-6Al-4V Alloy at the Beta Transus and its High Fatigue Performance" Symposium: **Composition-Processing-Microstructure-Property Relationships of Titanium, MS&T 2018**, Columbus, OH.

40. K. S. Ravi Chandran, "After Six Decades of Hall-Petch Relationship: A New Exponential Function for Better Correlation of Grain Size Effect on Strength of Iron/Steel Over Multiple Length Scales" Symposium: On **Deformation and Transitions at Grain Boundaries VI, MS&T 2018**, Columbus, OH.
41. A. Lark, V. Jindal, A. Degnah, K.S. Ravi Chandran, Designing Novel Cermet Materials in the Ti-B-Fe-Mo System, Symposium on Design, Processing, and Development of Structural Materials - Complex and Multicomponent Alloys, **MS&T 2017**, October 2017, Pittsburgh, USA
42. A. Degnah, V. Jindal and K. S. Ravi Chandran Computational Phase Equilibria and Design of Metal Matrix Composites in Ti-B-Fe System Symposium on Phase Transformations and Microstructural Evolution in Ti and Its Alloys **MS&T 2017** 10/12/2017 Pittsburgh, USA.
43. Somnaang Rou and K.S. Ravi Chandran, "First Principles (DFT) Calculation of Elastic Constants of Ti₃B₄," ICME Success Stories and Applications; **Fourth World Congress on Integrated Computational Materials Engineering** May 2017, Ypsilanti, MI, USA
44. Jun Du, K. S. Ravi Chandran. "Mechanism and Kinetics of In Situ Formation of Titanium Boride (TiB) in the Electrical-field-assisted Sintering Process", Innovative Processing and Synthesis of Ceramics, Glasses and Composites. **MS&T 2017**, Pittsburgh, USA, August 2017.
45. Jun Du, K. S. Ravi Chandran, A. P. Sanders. "Flexural Strength of Nanostructured Titanium Boride (TiB) Ceramic as Affected by the Leftover Ductile Metallic Phase", Innovative Processing and Synthesis of Ceramics, Glasses and Composites. **MS&T 2017**, Pittsburgh, USA, August 2017.
46. K. S. Ravi Chandran, "A physically based constitutive equation to characterize S-N fatigue behavior," **Presented in Seventh Int. Conf. Very High Cycle Fatigue, Dresden**, July 3-4, 2017.
47. K. S. Ravi Chandran, "A physically based constitutive equation for fatigue crack growth," **Presented in Seventh Int. Conf. Very High Cycle Fatigue, Dresden**, July 3-4, 2017.
48. P. Kumar, K.S. Ravi Chandran, F. Cao, "Accelerated Sintering of Powder Metallurgy Ti-6Al-4V alloy by repeated Phase Transformation Induced by Thermal Cycling", **MS&T16**, 23-27 Oct. 2016, Salt Lake City, UT, USA
49. A. Degnah, V. Jindal, A. Sanders, and K. S. Ravi Chandran, "Computational Design and Processing of Titanium Metal Matrix Composites in Ti-B-X System," **Symposium on ICME Accelerated Materials Discovery, Materials Science & Technology 2016** October 26, 2016
50. S. Rou and K. S. Ravi Chandran, "First Principles (DFT) Calculation of Elastic Constants of Ti₃B₄," presented at the **Materials Science & Technology 2016 Conference & Exhibition**, Salt Lake City, UT, 2016, Oct. 23-27, 2016
51. A. P. Sanders, P. Kumar, A. Degnah, K. S. Ravi Chandran, "Technique-dependent R-curve behavior in bulk nanostructured TiB" **Materials Science & Technology Conference 2016**, Salt Lake City, UT, Oct. 23-27, 2016
52. F. Cao, K.S. Ravi Chandran, P. Kumar, "Achieving very high strength in powder metallurgy Ti-6Al-4V alloy through accelerated sintering at β -transus and hydrogenation-dehydrogenation treatment," **MS&T 2016**, October 23-26, Salt Lake City, Utah.
53. J. Du, A.P. Sanders, V. Jindal, K.S. Ravi Chandran, "Rapid in situ formation and densification of titanium boride (TiB) nano-ceramic in electric field activated sintering," Processing and

Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – **Rustum Roy Symposium, MS&T 2016 Conference**, Oct 23, 2016

54. Y. Zhang, K. S. Ravi Chandran, Hassina Z Bilheux, Madhu Jagannathan. “Investigation of Li Spatial Distribution inside Bulk Li-Mg Alloy Electrode after Delithiation Using Neutron Imaging, Symposium on **Energy Storage VI: Materials, Systems and Applications Symposium, MS&T 2016 Conference**, Oct 23, 2016
55. B. Vadlamani, Ke An, M. Jagannathan, K.S. Ravi Chandran, An In-Situ Electrochemical Cell for Neutron Diffraction Studies of Phase Transitions in Small Volume Electrodes of Li-Ion Batteries, **Symposium EE4—Electrode Materials and Electrolytes for Lithium and Sodium Ion Batteries 2016 Materials Research Society Spring Meeting**, Phoenix, March 27-31, 2016.
56. K. S. Ravi Chandran, “Processing of Nanostructured Titanium Boride by SPS,” **Advanced Synthesis and Processing of Ceramics, MST2015**, Columbus OH, 10/2015
57. P. Kumar, K.S. Ravi Chandran :A quantitative relationship to predict the effect of extreme-sized pores on tensile ductility of powder metallurgy Ti-6Al-4V alloy, **Titanium-2015, Science and Technology, 13th world Conference on Titanium**, August 16-20, 2015, TMS. San Diego, CA, USA
58. P. Kumar, K.S. Ravi Chandran, F. Cao, P. Sun, M. Koopman, and Z. Zak Fang: Effects of powder processing and sintering on tensile ductility of PM Ti-6Al-4V alloy made by hydrogen sintering of titanium hydride powders, **Titanium-2015, Science and Technology, 13th world Conference on Titanium**, August 16-20, 2015, TMS. San Diego, CA, USA
59. K. S. Ravi Chandran, “Rapid SPS Synthesis of Nanostructured Titanium Boride.” **MS&T 2015 in Ceramics Processing Symposium**, October 2015
60. Fei Cao, K.S. Ravi Chandran, Pankaj Kumar, Pei Sun, Mark Koopman, Z. Zak Fang, Improved Fatigue Performance of PM Ti-6Al-4V Alloy Processed by Hydrogen Sintering and Phase Transformation of TiH₂ Powders, **The 13th World Conference on Titanium**, August 16-20, 2015, San Diego, CA
61. K. S. Ravi Chandran, S-N Fatigue Curve in Fatigue of Materials: Competing Failure Modes and Dual S-N Curves,” **Int. Symp. Fatigue of Materials III, Advances and Emergences in Understanding**, MST 2014, October 2014, Pittsburgh, PA.
62. Pankaj Kumar, Fei Cao, K.S. Ravi Chandran, Porosity-ductility correlation in Powder Metallurgy Ti-6Al-4V alloy made by Dehydrogenation of CIPed Compacts of Titanium Hydride, **Symposium on Advanced Manufacturing of Titanium**, Materials science & Technology, October 12-16, 2014, Pittsburgh, PA
63. Fei Cao, Pankaj Kumar, K.S. Ravi Chandran, Fatigue Behavior of PM Ti-6Al-4V Alloy Obtained by Dehydrogenation of CIPed Titanium Hydride Powder Compacts, **Symposium on Advanced Manufacturing of Titanium**, Materials science & Technology, October 12-16, 2014, Pittsburgh, PA
64. K. S. Ravi Chandran, “First Principles Calculations of Elastic Constants of Titanium Borides” **2nd World Congress on Integrated Computational Materials Engineering (ICME)**, Salt Lake City, July 7-11, 2013.

65. M. Jagannathan and K. S. Ravi Chandran, "Analytical Modeling and Simulation of Electrochemical Charge/Discharge Behavior of Li-ion Cells with Si Thin Film Negative Electrodes" **2nd World Congress on Integrated Computational Materials Engineering (ICME)**, Salt Lake City, July 7-11, 2013.
66. K. S. Ravi Chandran, "Joule Heating of Graphene: Analytical Modeling of Transient Heating by Currents", **Nanoscale Heat Transport, 2013 Materials Research Society Spring Meeting** in San Francisco, CA, April 2013
67. M. Jagannathan, K. S. Ravi Chandran, and Joshua E. Ramos, "Energy Storage Capacity and Cyclability of Si Anodes with Nanoscale Columnar Structure for Li-ion Batteries", **Symposium F: Materials for Vehicular and Grid Energy Storage, 2013 Materials Research Society Spring Meeting**, San Francisco, April 1-5, 2013.
68. M. Jagannathan and K. S. Ravi Chandran, "Computational Modeling of Electrochemical Charge/Discharge Behavior of a-Si Thin Film Anodes in Li-ion Cells", **Symposium G: Electrochemical Interfaces for Energy Storage and Conversion- Fundamental Insights from Experiments and Computations**, 2013 Materials Research Society Spring Meeting, San Francisco, April 1-5, 2013.
69. M. Jagannathan and K. S. Ravi Chandran, "Electrochemical Charge/Discharge Characteristics of Li(Mg) Alloy Anodes for High Capacity Lithium Batteries", **Symposium O: Next-Generation Energy Storage Materials and Systems, 2012 Materials Research Society Spring Meeting**, San Francisco, April 9-13, 2012.
70. M. Jagannathan and K. S. Ravi Chandran, "Phase transformation during electrochemical discharge of Li(Mg) Anodes for High Capacity Lithium Batteries", **Materials for Energy Storage, 2011 Materials Science & Technology Conference**, Columbus, OH, October 16-20, 2011
71. K. S. Ravi Chandran, "Accelerated Kinetics of Surface Coating Growth by Diffusion near the Phase Transition Temperature: Mechanism of Growth of Boride Layers on Titanium, **Phase Stability, Diffusion, Kinetics and their Applications (PSDK-VI)**, MS&T 2011, Columbus, Oct. 19, 2011
72. K. S. Ravi Chandran, "Recent Advances in Surface Hardening of Titanium with an Emphasis on Boriding and Its Potential Applications," **Titanium Processing and Applications, MS&T 2011**, Columbus, Oct. 20, 2011
73. B. Sarma, K. S. Ravi Chandran, presentation in **Phase Stability, Diffusion, Kinetics and their Applications** MS&T 2009, Pittsburgh, PA.
74. B. Sarma, K. S. Ravi Chandran, presentation in **Surface Engineering**, MS&T 2009, Pittsburgh, PA.
75. K. S. Ravi Chandran, Presentation in **Advances in Ceramic Synthesis**, MS&T 2009, Pittsburgh, PA.
76. B. Sarma, K. S. Ravi Chandran, presentation **Phase Stability, Diffusion, Kinetics and their Applications** MS&T 2008, Pittsburgh, PA.
77. K. S. Ravi Chandran, presentation in **Cermics Symposium**, MS&T 2008, Pittsburgh, PA.
78. K. S. Ravi Chandran, presentation in **Symposium on Competing modes in Fatigue**, MS&T 2008, Pittsburgh, PA.
79. M. Oja and K. S. Ravi Chandran, Orientation Imaging Microscopy in Fatigue, presentation MS&T 2008, Pittsburgh, PA

80. A. P. Sanders, N. Tikekar, C. Lee and K. S. Ravi Chandran, "Challenges in achieving surface texture in titanium surface hardened with titanium boride layers," **Medical Device Materials IV: Materials and Processes for Medical Devices**, Sept. 2007, Palm Desert, CA
81. C. Lee, N. Tikekar, K. S. Ravi Chandran and A. Sanders "Wear resistance of titanium boride coated titanium alloy against alumina," in **Medical Device Materials IV; Materials and Processes for Medical Devices Conference** Sept 2007, Palm Desert, CA
82. K. S. Ravi Chandran, and G. T. Cashman, "Competing failure modes in fatigue and the consequent S-N curve shapes," **Fourth Int. Conf. Very High Cycle Fatigue**, University of Michigan, Ann Arbor, August 2007
83. K. S. Ravi Chandran, "Duality of fatigue failures," GE Aviation, Cincinnati, OH, March 2006
84. N. M. Tikekar and K. S. Ravi Chandran, "A novel double layered coating on titanium: Kinetics of boron diffusion and coating development," presented at **Multicomponent Multiphase Diffusion Symposium honoring J. E. Morral**, 2005 TMS Annual Meeting, San Francisco, 2005.
85. K. S. Ravi Chandran and S. K. Jha, "Overview of high-cycle fatigue of beta titanium alloys: Role of microstructure on crack initiation, growth and fatigue life," presented at **Beta Titanium Alloys of the 2000's**, 2005 TMS Annual Meeting, San Francisco, 2005.
86. S. K. Jha and K. S. Ravi Chandran, "Designing a beta titanium alloy for optimum fatigue performance," presented at **Beta Titanium Alloys of the 2000's**, 2005 TMS Annual Meeting, San Francisco, 2005.
87. K. Panda and K. S. Ravi Chandran, "Ab-initio computational calculations of elastic constants of titanium boride using density functional theory," presented at **Computational Aspects of Mechanical Properties of Materials**, 2005 TMS Annual Meeting, San Francisco, 2005.
88. K. S. Ravi Chandran, "Titanium Boride Technology for Orthopedic Implants," Ortho Development Corporation, June 2003
89. K. S. Ravi Chandran, "Fracture Mechanics of Functionally Graded Materials," Symposium Honoring Prof. J. F. Knott, 2002 TMS Meeting, Columbus, OH
90. K. S. Ravi Chandran, "Hierarchical design of WC-CO cermets." Symposium honoring Prof. G Thomas, 2002 TMS Meeting, Columbus, OH
91. K. S. Ravi Chandran, "Ti-TiB MMCs" Advanced Metal Matrix Composites, 2002 TMS Meeting, Columbus, OH
92. S. K. Jha and K. S. Ravi Chandran, "An Unusual Fatigue Phenomenon: Duality of the S-N Curve in the beta-titanium Alloy: Ti-10V-2Fe-3Al," presented at **Fatigue 2002: Eight International Fatigue Congress**, Stockholm, Sweden, 2nd to 7th June 2002.
93. S. K. Jha and K. S. Ravi Chandran, "Effect of the beta-phase Solute Content on the Crack Nucleation and the Fatigue Life Behavior of the Ti-10V-2Fe-3Al Beta Titanium Alloy," presented at **Fatigue 2002: Eight International Fatigue Congress**, Stockholm, Sweden, 2nd to 7th June 2002..
94. S. Shankar and K. S. Ravi Chandran, "The role of beta annealing on the fatigue crack nucleation and fatigue life in Ti-10V-2Fe-3Al Beta Titanium Alloy," presented at **Fatigue 2002: Eight International Fatigue Congress**, Stockholm, Sweden, 2nd to 7th June 2002.
95. K. Panda and K. S. Ravi Chandran, "Synthesis of Ti-TiB FGM for Armor Applications", **2002 International Conference on Functionally Graded Materials: Technology Leveraged Applications**, May 6-7, 2002, Denver, CO

96. K. S. Ravichandran, S. S. Sahay, R. Atri, B. Chen and J. Rubin, "Microstructure and Mechanical Properties of in-situ Processed Ti-TiB Composites," Presented at **New Developments in Metal Matrix Composites**, 1999 TMS Fall Meeting, Cincinnati, OH.
97. K. S. Ravichandran, J. M. Larsen and Xu-Dong Li, "Significance of Crack Shape or Aspect Ratio on the Behavior of Small Fatigue Cracks", Presented at **Small Fatigue Cracks: Mechanics and Mechanisms Conference**, 6-11 December 1998, Kona, Hawaii
98. Xu-Dong Li and K. S. Ravichandran, "The Role of Crystal Anisotropy on the Stress Intensity Factor Distribution of Small Elliptical Cracks," Presented at **Small Fatigue Cracks: Mechanics and Mechanisms Conference**, 6-11 December 1998, Kona, Hawaii
99. K. S. Ravichandran and S. K. Jha, "Mean Stress Effects on Fatigue crack growth of titanium Alloys: Overview of mechanics and materials issues", Presented at the **Symposium on Fatigue of Titanium Alloys**, TMS Fall Meeting, 11-15 October 1998, Chicago, IL
100. P. S. Shankar and K. S. Ravichandran, "Microstructural Aspects of Fatigue Crack Initiation and Growth in Ti-10V-2Fe-3Al", Presented at the **Symposium on Fatigue of Titanium Alloys**, TMS Fall Meeting, 11-15 October 1998, Chicago, IL
101. S. K. Jha and K. S. Ravichandran, "The Mean Stress Dependence of Fatigue Crack Growth Behavior in the Beta-Titanium Alloy: Ti-10V-2Fe-3Al: The effect of aging", Presented at the **Symposium on Fatigue of Titanium Alloys**, TMS Fall Meeting, 11-15 October 1998, Chicago, IL
102. S. K. Jha and K. S. Ravichandran, "Origin Dependent Fatigue Crack Initiation in the Beta Titanium Alloy: Ti-10V-2Fe-3Al", Presented at **Small Fatigue Cracks: Mechanics and Mechanisms Conference**, 6-11 December 1998, Kona, Hawaii
103. W. A. Gooch, M. S. Burkins, R. Palicka, J. Rubin and K. S. Ravichandran, "Development and Ballistic Testing of Functionally Gradient Ceramic/Metal Applique," **17th International Symposium on Ballistics**, Midrand, South Africa, March 23-27, 1998
104. K. S. Ravichandran, K. An, R. E. Dutton and S. L. Semiatin, "Thermal conductivity of Plasma Spray Deposited Al₂O₃/ZrO₂ Multilayer Coatings," **United Thermal Spray Conference, UTSC-97**, Indianapolis, IN, September 15-18, 1997
105. K. S. Ravichandran, K. An, and R. Taylor, "Issues in the Measurement of Thermal conductivity of Thermal Barrier Coatings," **United Thermal Spray Conference, UTSC-97**, Indianapolis, IN, September 15-18, 1997.
106. K. S. Ravichandran, "Applicability of Paris Law to the Case of Small Fatigue Cracks in Ti-8Al," **Symposium on High Cycle Fatigue of Structural Materials**, Indianapolis, IN, September 15-18, 1997
107. K. S. Ravichandran, K. An, R. E. Dutton and S. L. Semiatin, "Thermal conductivity of Al₂O₃/ZrO₂ Multilayer Coatings made by Electron-Beam Physical Vapor Deposition," **99th Annual Meeting and Exposition of The American Ceramic Society**, Cincinnati, OH, May 4-7, 1997
108. K. S. Ravichandran, "Thermal conductivity of Two Phase Composites: A Microstructure-Based Model and Effects of Interface Thermal Resistance," **99th Annual Meeting and Exposition of The American Ceramic Society**, Cincinnati, OH, May 4-7, 1997
109. K. S. Ravichandran, J. Li, G. Nelson, R. Brennan and A. Ezz, "Microstructure and Mechanical Behavior of a Graded Material in the Ti-B System," **99th Annual Meeting and Exposition of The American Ceramic Society**, Cincinnati, OH, May 4-7, 1997

110. K. S. Ravichandran, K. An and R. Taylor, "Assessment of Thermal Conductivity of Plasma Sprayed Thermal Barrier coatings," **TBC'97, Thermal Barrier Coatings Workshop**, Cincinnati, OH, May 19-21, 1997
111. K. S. Ravichandran, "A senior undergraduate design problem for mechanical metallurgy courses: material selection and design for gas turbine blades," Presented in **Design in Material Education**, Symposium @ 1999 TMS Fall Meeting, 31 Oct. - 4 Nov., Cincinnati, OH
112. K. S. Ravichandran, "A senior undergraduate design problem in process and physical metallurgy: carburizing of steel," Presented in **Design in Material Education**, Symposium @ 1999 TMS Fall Meeting, 31 Oct. - 4 Nov., Cincinnati, OH
113. K. S. Ravichandran, S. S. Sahay and J. G. Byrne, "Processing of Microscale Brass/Steel Multilayer Composites and Tensile Properties," **Processing and Fabrication of Advanced Materials, Symp. at TMS Fall Meeting**, Cincinnati, OH, October 1996
114. K. S. Ravichandran, "Processing of Multilayer Composites by Cold Rolling," Department of Metallurgical Engineering, **University of Utah, Salt Lake city, UT**, January 1996
115. K. S. Ravichandran, "Thermal Barrier Coatings," Department of Metallurgical Engineering, **University of Utah, Salt Lake city, UT**, October 1995
116. K. S. Ravichandran, "Microstructure and Mechanical Behavior of Intermetallics & Composites," Department of Metallurgical Engineering, **University of Utah, Salt Lake City, UT**, 1995
117. K. S. Ravichandran, "Simple Models of Deformation Behavior of Composites with Discontinuous Reinforcements," **Symp. on High Performance Composites**, TMS Fall Meeting, October 1994, IL
118. K. S. Ravichandran, "Progress in Understanding the Growth Behavior of Small cracks in α_2 Titanium Aluminides," **Symp. on Fatigue and Fracture of Intermetallics II**, TMS Fall Meeting, 1994, IL
119. K. S. Ravichandran, D. B. Miracle and M. G. Mendiratta, "Fracture Toughness of $\text{Cr}_2\text{Hf}+\text{Cr}$ In-situ Intermetallic Composites," Presented at **Intermetallic composites III**, Materials Research Society Symposium, Spring Meeting, San Francisco, April 1994.
120. K. S. Ravichandran and J. M. Larsen, "Effects of Microstructure on the Propagation of Small Fatigue Cracks in Ti-24Al-11Nb," Presented at **AEROMAT'91, Advanced Aerospace Materials/Processes Conference**, 20-23 May 1991, Long Beach, CA.
121. K. S. Ravichandran and J. M. Larsen, "Microstructural Aspects of Small cracks in Titanium Aluminides," Presented at **Fatigue'93, Int. Conf. on Fatigue Thresholds**, 3-7 May 1993, Montreal, Canada.
122. K. S. Ravichandran and J. M. Larsen, "Effect of Microstructure on Fatigue Crack Growth Behavior of Small and Large Cracks in Titanium Aluminide, Ti-24Al-11Nb," Presented at **Int. Conf. on High Temperature Aluminides and Intermetallics**, 16-19 September 1991, San Diego, CA.
123. K. S. Ravichandran, "Fatigue Crack Growth Behavior Near Threshold in Ti-6Al-4V alloy," Presented at **Fatigue 90, Proc. of 4th Int. Conf. on Fatigue and Fatigue Thresholds**, May 1990, Honolulu, Hawaii.
124. K. S. Ravichandran and D. Banerjee, "Effects of Microstructural Morphology on the Near Threshold Fatigue Crack Growth Characteristics on a Near Alpha Titanium Alloy: Ti-6Al-3Mo-1.5Zr-0.25Si," Presented at **Fatigue 90, Proc. of 4th Int. Conf. on Fatigue and Fatigue Thresholds**, May 1990, Honolulu, Hawaii.

125. Jira, K. S. Ravichandran and J. M. Larsen, "Growth Characteristics of Small Surface Flaws in Ti-24Al-11Nb Titanium Aluminide," Presented at the **TMS-AIME Fall Meeting**, October 1989, Indianapolis, IN.
126. K. S. Ravichandran and E. S. Dwarakadasa, "Micromechanisms of Fatigue Crack Growth in a High Strength Steel," Presented at the **Annual National Metallurgists Day Meeting**, November 1987, Trivandrum, India.