K. Sharvan Kumar
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Brown University
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Education:

Ph.D., Materials Science and Engineering, Drexel University, 1984
Thesis: *Processing-Microstructure-Property Relationships in a Powder Metallurgy T15 Tool Steel.*
M.S., Materials Science and Engineering, Drexel University, 1981
B. Tech., Metallurgy, Indian Institute of Technology, Madras, 1979

Professional Appointments:

1984- June 1985: **Post-Doctoral Research Associate,** Drexel University, Philadelphia, PA.
1985 - 1989: **Scientist,** Martin Marietta Laboratories, Baltimore, MD.
1989 -1992: **Senior Scientist,** Martin Marietta Laboratories, Baltimore, MD.
Jan.1992 - Apr.1992: **Invited Visiting Scientist,** Wright Patterson AFB, Dayton,OH
(on leave of absence from Martin Marietta Laboratories).
1992 - 1994: **Senior Staff Scientist/Manager,** Martin Marietta Laboratories, Baltimore, MD.
1995 - 1999**: Associate Professor, Div. of Engineering,** Brown University, Providence, RI.
June 1999 - Present: **Professor, School of Engineering,** Brown University, Providence, RI.

Honors and Awards:

1. *Outstanding Achievement Award*, Martin Marietta Laboratories, 1990.
2. *Runner-up, Robert Lye Best Technical Paper Award*, Martin Marietta Laboratories, 1992.
3. *Best Technical Paper*, *First* International Symposium on Structural Intermetallics, Seven Springs, PA, 1993.
4. *Maryland Distinguished Young Scientist Award*, 1994 (all fields state-wide competition).
5. *Best Technical Paper*, Third International Symposium on Structural Intermetallics, Jackson Hole, Wyoming, April 2002.
6. Fellow of ASM – Class of 2003.
7. Japan Society for the Promotion of Science (JSPS) Fellowship Award, 2009.
8. Alexander von Humboldt Research Award, 2015.
9. Invited in 2022 to be on the Advisory Board of ISIJ International, the Monthly Journal published by the Iron and Steel Institute of Japan (Term: January 2023-December 2026).
10. On the External Advisory Board of the Dept. of Metallurgical and Materials Engineering, Indian Institute of Technology Madras (IIT Madras). (Term: 2 years starting 2023).

Invited Lectures* and Conference Presentations (2015-2020):

1*. "Microstructure-informed Modeling of the Deformation Response of Advanced High Strength Steels", *invited talk*, 3rd ESISM Workshop in Kyoto "Fundamental Issues of Structural Materials", **Kyoto, Japan**, January 2015.
2. "Deformation-Induced Martensitic Transformation in a 201LN Austenitic Sheet Steel", Materials Science &Technology 2015, **Columbus, OH**, October 2015.

3*. "Role of Interfaces on Crack Growth in Metallic Laminates", *invited talk*, MRS Fall 2015, **Boston, MA**, December 2015.

4. "Stress-strain response and microstructure of high entropy alloy ($Fe_{20}Mn_{20}Ni_{20}Co_{20}Cr_{20}$) deformed micro-pillars", TMS Annual Meeting, **Nashville, TN**, Feb. 2016.

5. "Monotonic and Cyclic Response of Austenitic and Martensitic NiTi wires for Medical Device Applications", TMS Annual Meeting, **Nashville, TN**, Feb. 2016.

6. "Micropillar Cyclic Compression Study of a Nitinol Tube Intended for Medical Devices", TMS Annual Meeting, **Nashville, TN**, Feb. 2016.

7. "Defect Structures in the Single Phase C14 Laves Phase $NbFe_2$", MRS Fall Meeting, **Boston, MA**, Dec. 2016.

8. "Creep of Binary lamellar Fe-Al Alloys", MRS Fall Meeting, **Boston, MA**, Dec. 2016.

9. "Microscale Compression at Room Temperature of $Fe_{20}Mn_{20}Ni_{20}Co_{20}Cr_{20}$ High Entropy Alloy", MRS Fall Meeting, **Boston, MA**, Dec. 2016.

10. "Cyclic Deformation Behavior of NiTi within the Superelastic Regime", MRS Fall Meeting, **Boston, MA**, Dec. 2016.

11. "Strain effect on catalytic activity of Pd-based thin films during ORR", MRS Fall Meeting, **Boston, MA**, Dec. 2016.

12. "Macro- and Micro-scale Study of Hydrogen Susceptibility of Advanced High Strength Sheet Steels", TMS Annual Meeting, **San Diego, CA**, Feb. 2017.

13* "Cyclic Deformation Response of NiTi for Medical Devices", Intermetallics 2017, Kloster Banz, **Bad Staffelstein, Germany**, October 2017.

16 "Thermal Stability of Precipitated Austenite in an Fe - 10 Ni - 0.1C Steel", TMS Annual Meeting, **Phoenix, AZ**, March 2018.

17. "Microscale Evaluation of Hydrogen Susceptibility of Martensitic Sheet Steels", TMS Annual Meeting, **Phoenix, AZ**, March 2018.

18. "Mechanical Behavior of a three-phase Mo-Si-B alloy produced by Reaction Synthesis", TMS Annual Meeting, **Phoenix, AZ**, March 2018.

19. "Tensile Response of Binary Mo-Si Solid Solution Alloys", TMS Annual Meeting, **Phoenix, AZ**, March 2018.

20* "Metals and Alloys in Commercial Aircraft", The Fathi Habashi Lecture of the Canadian Institute of Metallurgy, MS&T Fall Meeting, **Columbus, OH**, October 2018.

21* "Cyclic Deformation Behavior of NiTi for Medical Devices", MRS Fall Meeting, **Boston, MA**, November 2018.

22*. "Cyclic Deformation Behavior of NiTi for Medical Devices", Off-site retreat of the Nanomechanics Group of the Max-Planck-Institut für Eisenforschung, **Cuxhaven, Germany**, January 2019.

23*. "Polytypic Transformation and Twinning in Laves Phases", International Workshop on Laves Phases, Max-Planck-Institut für Eisenforschung, **Düsseldorf, Germany**, January 2019.

24*. "Cyclic Deformation Behavior of NiTi for Medical Devices", The 2nd Symposium for World Leading Research Centers -Materials Science and Spintronics- **Sendai, Japan**, February 2019.

25*. "Metals and Alloys in Commercial Aircraft", Dinner Presentation: 2019 ASM Annual Symposium, Life cycle of Materials, GE Research, **Niskayuna, NY**, June 2019.

26*. "Metals and Alloys in Commercial Aircraft", Opening Talk: Intermetallics 2019: **Kloster Banz, Germany**, September 2019.

27* "*C*-axis Compression of Magnesium Single Crystal", off-site retreat of the Nanomechanics Group of the Max-Planck-Institut für Eisenforschung, **Lingen, Germany**, January 2020.

(After Spring 2020, I have not traveled overseas or to any National or International Conferences due to the pandemic situation).

Completed Research, Scholarship and/or Creative Work:

(a) *Chapters in Books/Book Editor:*

1. K.S. Kumar, "ADVANCED INTERMETALLICS" - a chapter in the book ***Intermetallics***. Editors: N.S. Stoloff and V.K. Sikka. Publishers: Chapman and Hall **1996**, p. 392.

2. K.S. Kumar, "SILICIDES: SCIENCE, TECHNOLOGY AND APPLICATIONS" - a chapter in the two-volume book ***Intermetallic Compounds: Principles and Practice***. Editors: J.H. Westbrook and R.L. Fleischer. Publishers: John Wiley and Sons **1994**, p. 211.

3. J.H. Perepezko, R. Sakidja and **K.S. Kumar**, "Mo-Si-B ALLOYS FOR ULTRA-HIGH TEMPERATURE APPLICATIONS**",** a chapter in the book **"Advanced Structural Materials: Properties, Design Optimization and Applications",** Edited by: W.O. Soboyejo and T.S. Srivatsan, CRC Press, Taylor & Francis Group, pp. 437-473, **2007**.

4. "*Intermetallics Base Alloys for Structural and Functional Applications*", Vol. 1295, MRS Proceedings of the Fall 2010 Meeting. Cambridge University Press; Edited by M. Palm, B. Bewlay, **K.S. Kumar** and K. Yoshimi and published in April 2011.

5. "*Intermetallics Based Alloys Science, Technology and Applications*", Vol. 1516, MRS Proceedings of the Fall 2012 Meeting. Cambridge University Press; Edited by I. Baker, M. Heilmaier, **Sharvan Kumar** and Kyosuke Yoshimi and published August 2013.

6. Kumar S., Padture N.P. **Materials in the Aircraft Industry**. In: Kaufman B., Briant C. (eds) Metallurgical Design and Industry. Springer, Cham. pp 271-346, 2018. https://doi.org/10.1007/978-3-319-93755-7_5

(b) *Refereed Articles*:

1. R. Vasudevan and K. Sharvan Kumar, "Some Studies on the Use of Ultrasonic Vibrations in the Oil Impregnation of Porous Bearings," **Indian J. Engineers**, 19th Anniversary Number, p. 9, (1979).
2. K.S. Kumar, A. Lawley, and H.W. Antes, "Thermal-Mechanical Processing of Iron Powder for High Compressibility," in the Proceedings, P/M '82 in Europe, International Powder Metallurgy Conference, Florence, Italy, June 20-25, 1982 (Associazione Italiana di Metallurgia), p.437 (1982).
3. S. Kumar, A. Lawley, and M.J. Koczak, "The Microstructure of Tool Steels Processed from Rapidly Solidified Powders," in Rapid Solidification Processing: Principles and Technologies, III, Proceedings of the Third Conference on Rapid Solidification Processing: Principles and Technologies, R. Mehrabian, ed. Gaithersburg, Maryland, p. 223 (1982).
4. S. Kumar, A. Fareed, M.J. Koczak, A. Lawley, and J.E. Stulga, "Microstructure and Properties of P/M Tool Steels," Progress in Powder Metallurgy, Vol. 39, in Proceedings of the 1983 Annual Powder Metallurgy Conference, H.S. Nayar, S.M. Kaufman, and K.E. Meiners, eds., MPIF, Princeton, NJ, p. 627 (1983).
5. K.S. Kumar, A. Lawley, and M. Sangam, "Tool Steels and White Irons: The Utility of

Powder Processing in Alloy Design," in High-Temperature Alloys: Theory and Design, J.O. Stiegler, ed., TMS-AIME, Warrendale, PA, p. 323 (1984).

6. A.S. Fareed, K.S. Kumar, A. Lawley, and M.J. Koczak, "Strength and Toughness of Powder Processed P/M High Speed Steels," in Modern Developments in Powder Metallurgy, Vol. 17, E.N. Aqua and C.I. Whitman, eds., MPIF, Princeton, NJ, p. 307 (1984).
7. U.V. Deshmukh, S. Kumar, M.J. Koczak, and C. Romanowski, "Design and Development of High Modulus Al-Zn-Mg-X P/M Aluminum Alloys," in High Strength Powder Metallurgy Aluminum Alloys - II, G.J. Hildeman and M.J. Koczak, eds., TMS-AIME, Warrendale, PA, p. 79 (1986).
8. J.R. Pickens, K.S. Kumar and T.J. Langan, "High Strength Aluminum Alloy Development," Corrosion Prevention and Control, Vol. 33, in Proceedings of the 33rd Sagamore Army Materials Research Conference, M.I. Levy and S. Isserow, eds., p. 276 (1986).
9. K.S. Kumar and J.R. Pickens, "Ternary Low-Density Cubic $L1_2$ Aluminides," in Dispersion Strengthened Aluminum Alloys, Y.W. Kim and W.M. Griffith, eds., TMS, p. 763 (1988).
10. R.O. England, J.R. Pickens, K.S. Kumar, and T.J. Langan, "Improved Al-Mg Weldable Alloys Made by Rapid Solidification Powder Metallurgy Processing," in Dispersion Strengthened Aluminum Alloys, Y.W. Kim and W.M. Griffith, eds., TMS, p. 371 (1988).
11. K.S. Kumar and J.R. Pickens, "Compression Behavior of the $L1_2$ Intermetallic $Al_{22}Fe_3Ti_8$, **Scripta Metall**., 22, p. 1015 (1988).
12. R.K. Viswanadham, S.K. Mannan and S. Kumar, "Mechanical Alloying Behavior in Group V Transition Metal/Silicon Systems," **Scripta Metall**., 22, p. 1011 (1988).
13. R.K. Viswanadham, S.K. Mannan, K.S. Kumar, and A. Wolfenden, "Elastic Modulus of NiAl-TiB_2 Composites in the Range 300-1273K," **J. Mater. Sci. Lett**., 8, p. 409 (1989).
14. K.S. Kumar and S.K. Mannan, "Mechanical Alloying Behavior in the Nb-Si, Ta-Si and Nb-Ta-Si Systems," in High Temperature Ordered Intermetallics III, Vol. 133, N.S. Stoloff, C.C. Koch, C.T. Liu, and A.I. Taub, eds., Materials Research Society, Pittsburgh, PA, p. 415 (1989).
15. J.D. Whittenberger, R.K. Viswanadham, S.K. Mannan, and K.S. Kumar, "1200 to 1400K Slow Strain Rate Compressive Properties of NiAl/Ni_2AlTi Base Materials," in High Temperature Ordered Intermetallics III, Vol. 133, N.S. Stoloff, C.C. Koch, C.T. Liu and A.I. Taub, eds., Materials Research Society, Pittsburgh, PA, p. 621 (1989).
16. J.D. Whittenberger, S.K. Mannan, and K.S. Kumar, "1100 to 1300K Slow Plastic Compression Properties of Ni-38-5 Al Composites," **Scripta Metall**., 23, p. 2055, (1989).
17. J.D. Whittenberger, R.K. Viswanadham, S.K. Mannan, and K.S. Kumar, "1200 to 1400K Slow Strain Rate Compressive Behavior of NiAl/Ni_2AlTi Alloys and NiAl/Ni_2AlTi-TiB_2 Composites," **J. Mater. Res**., 4,(5), p. 1164 (1989).
18. J.D. Whittenberger, D.J. Gaydosh, and K.S. Kumar, "1300K Compressive Properties of Several Dispersion Strengthened NiAl Materials," **J. Mater. Sci.**, 25, p. 2771 (1990).
19. J.D. Whittenberger, S. Kumar, S.K. Mannan, and R.K. Viswanadham, "Slow Plastic Deformation of Extruded NiAl-10TiB_2 Particulate Composites at 1200 and 1300K," **J. Mater. Sci. Lett.**, 9, p. 326 (1990).
20. K.S. Kumar, "Mechanical Alloying Behavior in the Group IV- and Group V-Cr Systems," Solid State Powder Processing, A.H. Clauer and J.J. deBarbadillo, eds., TMS, Warrendale, PA, p. 315 (1990).
21. K.S. Kumar, M.S. DiPietro, S.A. Brown, and J.D. Whittenberger, "Processing-Microstructure-Property Relationships in TiB_2 Particulate-Reinforced Composites of $L1_2$ Trialuminides," in HITEMP Review 1990, Proceedings of the 3rd Annual HITEMP Review, NASA Conference Publication 10051, p. 24-1 (1990).

22. S.K. Mannan, K.S. Kumar, and J.D. Whittenberger, "High Temperature Slow Strain Rate Compression Studies on CoAl-TiB_2 Composites," **Metall. Trans**. 21A, p.2179 (1990).
23. M.E. Eberhart, K.S. Kumar, and J.M. MacLaren, "An Electronic Model for the DO_{22} to $L1_2$ Transformation of the Group IV-A Trialuminides," **Philos. Mag. B**, 61(6), p.943 (1990).
24. K.S. Kumar, "Review: Ternary Intermetallics in Aluminum-Refractory Metal-X (X = V, Cr, Mn, Fe, Co, Ni, Cu, Zn) Systems," **Int. Mater. Rev**., 35, 293 (1990).
25. K.S. Kumar, "X-Ray Peak Intensities for the Binary Compound Al_3Ti," **Powder Diffraction**, 5(3), p. 165 (1990).
26. K.S. Kumar, S.A. Brown, and J.R. Pickens, "Effect of a Prior Stretch on the Aging Response of an Al-Cu-Li-Ag-Mg-Zr Alloy," **Scripta Metall. Mater.**, 24, p. 1245, (1990).
27. K.S. Kumar, and R.A. Herring, "Comments on the Temperature Dependence of Compressive Yield Strength in Polycrystalline Aluminum-Rich $L1_2$ Compounds," **Scripta Metall. Mater**., 24, p. 1713 (1990).
28. S.A. Brown, K.S. Kumar, and J.D. Whittenberger, "Compression Behavior of the Forged $L1_2$ Compounds, $Al_{67}Ti_{25}Cr_8$ and $Al_{66}Ti_{25}Mn_9$," **Scripta Metall. Mater**., 24, p. 2001 (1990).
29. M.S. DiPietro, K.S. Kumar, and J.D. Whittenberger, "Compression Behavior of TiB_2 Particulate-Reinforced Composites of $Al_{22}Fe_3Ti_8$," **J. Mater. Res**., 6, p. 530 (1990).
30. J.D. Whittenberger, K.S. Kumar, S.A. Brown, and M.S. DiPietro, "Mechanical Properties of Monolithic and Particulate Composites Based on $L1_2$ Al_3Ti," Light Weight Alloys for Aerospace Application II: ed. E.W. Lee and N.J. Kim, TMS, Warrendale PA, p. 327 (1991).
31. K.S. Kumar, S.A. Brown, M.S. DiPietro, and J.D. Whittenberger, "Microstructure-Property Relationships in $L1_2$ Trialuminides With and Without Reinforcements," in HITEMP Review IV, Proceedings of the NASA HITEMP Conference held in Westlake, Ohio, (1991).
32. K.S. Kumar, A. Lawley, and M.J. Koczak, "Powder Metallurgy T 15 Tool Steel: Part I. Characterization of Powder and Hot-Isostatically Pressed Material," **Metall. Trans**. 22A, p. 2733 (1991).
33. K.S. Kumar, A. Lawley, and M.J. Koczak, "Powder Metallurgy T 15 Tool Steel: Part II. Microstructures and Properties after Heat Treatment," **Metall. Trans.** 22 A, p. 2747 (1991).
34. J.D. Whittenberger, K.S. Kumar and S.K. Mannan, "1000 to 1300K Slow Plastic Compression Properties of Al-Deficient NiAl," **J. Mater. Sci**. 26, p. 2015 (1991).
35. J.D. Whittenberger, K.S. Kumar, and S.K. Mannan, "1200 and 1300K Slow Plastic Compression Properties of Ni-50Al Composites," in **Materials at High Temperatures**, 9, p 3 (1991).
36. K.S. Kumar, M.S. DiPietro, and J.D. Whittenberger, "Compression Studies on Particulate Composites of Ternary Al-Ti-Fe and Quaternary Al-Ti-Fe-Nb and Al-Ti-Fe-Mn $L1_2$ Compounds," in High Temperature Ordered Intermetallics IV, Vol. 213, (eds. L. Johnson, D.P. Pope, and J.O. Stiegler) MRS, Pittsburgh, PA, p. 1039 (1991).
37. K.S. Kumar, S.A. Brown and J.D. Whittenberger, "Compression, Bend and Tension Studies on Forged $Al_{67}Ti_{25}Cr_8$ and $Al_{66}Ti_{25}Mn_9$ $L1_2$ Compounds," in High Temperature Ordered Intermetallics IV, Vol. 213, (eds. L. Johnson, D.P. Pope, and J.O. Stiegler) MRS, Pittsburgh, PA, p. 481 (1991).
38. P.J. Smith-Hartley, K.S. Kumar and S.A. Brown, "The Effects of Processing Parameters on the Post-SPF Microstructure and Mechanical Properties of Weldalite™ 049," Proceedings, 1992 Fall TMS meeting in Chicago.
39. K.S. Kumar and S.A. Brown, "Tensile Deformation of the Forged $L1_2$ Compound $Al_{66}Ti_{25}Mn_9$," **Philos. Mag. A**, 65(1), 91 (1992).

40. J.D. Whittenberger, R.D. Noebe, C.L. Cullers, K.S. Kumar, and S.K. Mannan, "1000 to 1200K Time Dependent Compressive Deformation of Single Crystalline and Polycrystalline B2 Ni-40Al," **Metall. Trans**. 22A, p. 1595 (1991).
41. K.A. Montoya, F.H. Heubaum, K.S. Kumar, and J.R. Pickens, "Compositional Effects on the Solidus Temperature of an Al-Cu-Li-Ag-Mg Alloy," **Scripta Metall. Mater.**, Vol. 25, p. 1489 (1991).
42. K.S. Kumar and J.D. Whittenberger, "Discontinuously Reinforced Intermetallic Matrix Composites via XD™ Synthesis," **Materials Science and Tech.**, 8, p. 317 (1992).
43. K.S. Kumar, S.A. Brown, K. Montoya, J.D. Whittenberger, and M.S. DiPietro, "Mechanical Behavior of L12 Trialuminides," in Intermetallic Compounds - Structure and Properties, ed. O. Izumi, Japan Institute of Metals, Aoba Aramaki, Sendai, Japan, p. 667 (1991).
44. K.S. Kumar and J.D. Whittenberger, "Intermetallic Matrix Composites via XD™ Synthesis," in Intermetallic Compounds - Structure and Properties, ed. O. Izumi, Japan Institute of Metals, Aoba Aramaki, Sendai, Japan, p. 927 (1991).
45. K.S. Kumar, "Discontinuously Reinforced Intermetallic Matrix Composites," **ISIJ International**, 31, p 1248 (1991).
46. K.S. Kumar, S.K. Mannan, and R.K. Viswanadham, "Fracture Toughness of NiAl and NiAl-based Composites," **Acta Metall. Mater**., 40 (6), p. 1201 (1992).
47. K.S. Kumar and S.A. Brown, "Tensile Behavior of the $L1_2$ Compound $Al_{67}Ti_{25}Cr_8$," **Acta Metall. Mater**., 40 (8), p. 1923 (1992).
48. K.S. Kumar and J.D. Whittenberger, "Interdiffusion between the L12 Trialuminides $Al_{66}Ti_{25}Mn_9$ and $Al_{67}Ti_{25}Cr_8$," **J. Mater. Res**., 7 (5), p.1043 (1992).
49. K.S. Kumar and S.A. Brown, "Compression Behavior of Quaternary and Higher Order Solid-Solution L12 Trialuminides," **Scripta Metall. Mater.**, 26 (2), p. 197 (1992).
50. K.S. Kumar, R. Darolia, D.F. Lahrman and S.K. Mannan, "Tensile Creep Response of an NiAl - TiB_2 Particulate Composite," **Scripta Metall. Mater**., 26 (6), 1001 (1992).
51. K.S. Kumar, M.S. DiPietro and J.D. Whittenberger, "Compressive Response of Monolithic and Particulate-Reinforced Composites of $Al_{67}Ti_{25}Cr_8$ and $Al_{66}Ti_{25}Mn_9$," **Acta Metall. Mater.**, 41 (5), 1379 (1992).
52. S.A. Brown, K.S. Kumar and J.D. Whittenberger, "Mechanical Behavior of TiB_2-Particulate Reinforced $Al_{66}Ti_{25}Mn_9$ Produced by Ingot Metallurgy," **Mater. Sci and Eng**., A 161, p. 187 (1993).
53. S.A. Brown and K.S. Kumar, "Fracture Toughness of the $L1_2$ Compounds $Al_{66}Ti_{25}Mn_9$ and $Al_{67}Ti_{25}Cr_9$," **J. Mater. Res**., 8 (8), p. 1763 (1993).
54. K.S. Kumar and S.A. Brown , "Bend Testing of Forged $Al_{66}Ti_{25}Cr_9$," in High Temperature Ordered Intermetallic Alloys V, ed. I. Baker, R. Darolia, J.D. Whittenberger and M.H. Yoo, vol. 288, MRS, Pittsburgh PA., 781 (1993).
55. S.A. Brown, D.P. Pope and K.S. Kumar, "Mechanical Behavior of $L1_2$ Single Crystal $Al_{66}Ti_{25}Mn_9$," in High Temperature Ordered Intermetallic Alloys V, ed. I. Baker, R. Darolia, J.D. Whittenberger and M.H. Yoo, vol. 288, MRS, Pittsburgh PA., 723 (1993).
56. P. Hazzledine, K.S. Kumar, D.B. Miracle and A.G. Jackson, "Synchroshear in Laves Phases," in High Temperature Ordered Intermetallic Alloys V, ed. I. Baker, R. Darolia, J.D. Whittenberger and M.H. Yoo, vol .288, MRS, Pittsburgh PA., p. 591 (1993).
57. C.T. Liu and K.S. Kumar, "Ordered Intermetallic Alloys, Part I ," **JOM**, 45 (5), p. 38 (1993).
58. K.S. Kumar and C.T. Liu, "Ordered Intermetallic Alloys, Part II," **JOM**, 45 (6), p. 28 (1993).

59. K.S. Kumar, "Microstructure and Mechanical Properties of $L1_2$ Trialuminides", in Structural Intermetallics, Proceedings of the Seven Springs "International Symposium Structural Intermetallics", Fall 1993, ed: R. Darolia et al., TMS Warrendale, PA. p. 87 (1993).
60. K.S. Kumar and G. Bao, "Intermetallic Matrix Composites - An Overview", **Composites Science and Technology**, 52, p. 127 (1994).
61. K.S. Kumar and D.B. Miracle, "Microstructure and Mechanical Properties of a Cr-Cr_2Hf Alloy", **Intermetallics,** 2, p. 257 (1994).
62. E.P. George, M. Yamaguchi, K.S. Kumar and C.T. Liu, "Ordered Intermetallics", **Ann. Rev. Matl. Sci.**, vol. 24, p. 409 (1994).
63. J.D. Whittenberger, K.S. Kumar, M.S. DiPietro and S.A. Brown, "Characteristics of Elevated Temperature Deformation in Several $L1_2$-ModifiedAl_3Ti-based Alloys", **Intermetallics**, 3, p.221 (1995).
64. K.S. Kumar, J.A.S. Green, D.E. Larsen, Jr. and L.D. Kramer, "Titanium Aluminide Composites", Advanced Materials and Processes, April 1995.
65. J. Douin, K.S. Kumar and P. Veyssiere, "Dislocation Structure in $L1_2$ Mn-Stabilized Al_3Ti Deformed between 77K and 873K", **Mater. Sci. Eng**., A192/193, p.92 (1995).
66. J.D. Whittenberger, K.S. Kumar, M.S. DiPietro and S.A. Brown, "Elevated Temperature Deformation of Several Quaternary $L1_2$ Al_3Ti-Based Alloys Reinforced with TiB_2 Particles", **Journal of Materials Science,** 30, 6309 (1995).
67. K.S. Kumar and S.A. Brown, "Response to Three-Point Bending of the Forged $L1_2$ Compound $Al_{66}Ti_{25}Cr_9$", **Intermetallics,** 4, 231 (1996).
68. K.S. Kumar, "Intermetallic Materials", in 1996 McGraw-Hill Yearbook of Science and Technology.
69. K.S. Kumar and M.S. DiPietro, "Ballistic Penetration Response of Intermetallic Matrix Composites", **Scripta Metall. Mater**., 32(5), p.793 (1995).
70. K.S. Kumar and P.M. Hazzledine, "The C14-to-C15 Transformation in Cr_2Hf" in High Temperature Ordered Intermetallic Alloys VI, ed: J.A. Horton et al., vol. 364, p. 1383, 1995.
71. K.S. Kumar, S.A. Brown and J.R. Pickens, "Microstructural Evolution during Aging of an Al-Cu-Li-Ag-Mg-Zr Alloy", **Acta Metall. Mater**. 44, 1899 (1996).
72. K.S. Kumar, C.T. Liu and J.L. Wright, "Low Temperature Embrittlement of Ni_3(Si,Ti) Alloys," **Intermetallics**, 4, 309 (1996).
73. K.S. Kumar and F.H. Heubaum, "The Effect of Li Content on the Natural Aging Response of Al-Cu-Li-Mg-Ag-Zr Alloys," **Acta Metall. Mater**., 45, 2317 (1997).
74. K.S. Kumar and C.T. Liu, "Precipitation in a Cr-Cr_2Nb Alloy," **Acta Metall. Mater**.,45, 3671 (1997).
75. K.S. Kumar, "Laves Phase-Based Materials: Microstructure, Deformation Modes and Properties", High Temperature Ordered Intermetallic Alloys VII, vol. 460, editors: C. Koch, C.T. Liu and N.S. Stoloff, MRS, Pittsburgh, PA. 1997, p. 677.
76. Lixin Pang and K.S. Kumar, "Microstructure and Mechanical Properties of Fe-40Al-0.6C", in Structural Intermetallics 1997, *Proceedings of the International Symposium on Structural Intermetallics - II*, Seven Springs, PA, Sept. 1997, Editors: M.V. Nathal et al., TMS, Warrendale, PA., 1997, p.703 .
77. Lixin Pang and K.S. Kumar, "Precipitation in an Fe-40Al-0.5C-0.7B Alloy", **Philos. Mag. Lett**. - 76, 323 (1997).
78. L. Heatherly, E.P. George, C.T. Liu and K.S. Kumar, "An Auger Investigation of the Grain-Boundary Chemistry in Ni_3(Si,Ti) Alloys", **Mater. Sci and Eng**. **A**, 245, 80 (1998).
79. Lixin Pang and K.S. Kumar, "Mechanical Behavior of an Fe-40Al-0.6C Alloy", **Acta Materialia**.,46, 4017 (1998).

80. L. Pang and K.S. Kumar, "Effect of Heat Treatment on the Microstructure of an Fe-40Al-0.7C-0.5B Alloy", **Mater. Sci and Eng**., A258, 161 (1998).
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Service and Experience:

(i) *To University*:
Represented the Materials Science Program for ABET accreditation (Fall 2002, 2008 and 2014)
Undergraduate Materials Engineering Concentration Advisor (Fall 2002—2008; 2009-2014)
Division of Engineering, Brown Distinguished Alumni Medal: Selection committee (2004-2011)
Brown University's *Tenure, Promotions and Appointments Committee* -- 2006- 2009
Freshman and Sophomore advisor 2009-2014; 2017-present.
University Graduate Council 2019 – 2021.
School of Engineering, Core Curriculum Committee, Spring 2022.
School of Engineering, Materials Graduate Representative, Fall 2022.

(ii) *To Profession*:

Principal Editor –*Journal of Materials Research* -- June 2006 – Dec.2012
Serve as a Reviewer for *Intermetallics* and *Inter. Journal of Powder Metallurgy.*

Review scientific papers for journals in the field (Acta Materialia, Metallurgical Transactions, Journal of Materials Research, Intermetallics, Science, Philosophical Magazine, Proceedings of the National Academy of Science, Nature) -*Was officially recognized in 2018 as an Acta Materialia Outstanding Reviewer for the year 2017.*
Review proposals for NSF, AFOSR and DOE Agencies.
Served on the *National Academies Committee on "Alternative Technologies to Anti-Personnel Landmine", October 1999 – March 2001.*
Served on the National Academy Panel on Armor and Armaments to evaluate the Army Research Program 2007-2011.
Co-Organizer of the MRS Fall 2010 Symposium on Intermetallics (Symposium N).
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Regularly serve as session chair or co-chair in National and International symposia.

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