

HELEN M. CHAN

- Higher Education:**
1. Degree of Bachelor of Science with First Class Honors in “Materials Science”, Imperial College of Science and Technology, University of London, ENGLAND (1979). A.R.S.M. (Associate of the Royal School of Mines) (1979).
 2. Degree of Doctor of Philosophy in “Materials Science”, Imperial College of Science and Technology, University of London, ENGLAND (1982). D.I.C. (Diploma of Imperial College) (1982).

Experience:

July 2006 – July 2016	Chair Department of Materials Science and Engineering Lehigh University
Sept. 1995 - Present	Full Professor Department of Materials Science and Engineering Lehigh University
May 1991 - Sept. 1995	Associate Professor Department of Materials Science and Engineering Lehigh University
Sept. 1986 - May, 1991	Assistant Professor Department of Materials Science and Engineering Lehigh University
May 1986 - Dec. 1987	Guest Scientist Ceramics Division National Institute of Standards and Technology
Nov. 1982 - Apr. 1986	Research Engineer/Post-Doctoral Research Associate Department of Materials Science and Engineering Lehigh University

Summary of Research Experience:

Dr. Chan is the author of over 180 publications, 165 contributed talks, and over 110 invited presentations. Her research interests include the application of reactive processing to fabricate unique ceramic/metal structures, the mechanical behavior of ceramic composites, and the role of interfacial chemistry in determining the elevated temperature mechanical behavior of ceramics. Dr. Chan has also been actively involved in research on the processing and microstructural development of lead based relaxor ferroelectrics for transducer/actuator applications.

Awards and Honors:

- Included in *Thomson ISI's* list of highly cited researchers (Materials).
- Chair of 2008 Gordon Research Conference on *Solid State Ceramics*, Proctor Academy, Andover, NH (August 10 – 15, 2008).
- Teaching Excellence Award, P.C. Rossin College of Engineering and Applied Science, April 2007.
- Eleanor and Joseph Libsch Award for Excellence in Research, Lehigh University, 2005.
- Fellow of the American Ceramic Society (2005).
- New Jersey Zinc Professorship at Lehigh for excellence in teaching and research (1999).
- “Class of 1961” Professorship from Lehigh University (1993).
- ASM International 1992 Bradley Stoughton Award for "Outstanding dedication to teaching, excellence, and exemplary mentorship of students in the field of materials and other engineering disciplines."
- “1991 Outstanding Young Member Award” from Lehigh Valley Chapter of ASM.
- “Service Teaching Excellence Award” for the College of Engineering and Applied Science, Lehigh University (1991 and 1992).
- Alfred Noble Robinson Award (Lehigh University) for “Outstanding Performance and Unusual Promise of Professional Achievement” (1990).
- Four time recipient of American Ceramic Society’s Roland B. Snow award for “Best of Show” in national ceramographic contest (1986, 1990, 1992, 1999).
- “Governor's Prize” for most outstanding student graduating in Materials Science (1979).
- Entrance scholarship to Imperial College (1976).

Publications (Helen M. Chan)

1. H.M. Chan and F.J. Humphreys
"The Recrystallisation of Aluminum-Silicon Alloys Containing a Bimodal Particle Distribution." *Acta. Met.*, 32 (1984) pp. 235-243.
2. H.M. Chan, M.P. Harmer, M. Lal and D.M. Smyth
"Calcium Site Occupancy in BaTiO₃." Proc. Materials Research Society Meeting, Boston, November 1983, pp. 345-350.
3. H.M. Chan and F.J. Humphreys
"Subgrain Rotation During In-Situ Annealing of Al-6wt% Ni." 42nd EMSA Meeting, 1984, pp. 476-477.
4. H.M. Chan, I. Piscopo, D.B. Williams and M.R. Notis
"AEM Study of the CaZrO₃/ZrO_{2(ss)} Eutectic: A Comparison Between EELS and UTW X-ray EDS." Proc. AEM Workshop, Lehigh University, Bethlehem, PA, 1984, pp. 363-368.
5. K.H. Liu, H.M. Chan, M.R. Notis and V.C. Pigott
"Analytical Electron Microscopy of Early Steel from the Bacqah Valley, Jordan." *Microbeam Analysis 1984*, Eds. A.D. Romig, Jr. and J.I. Goldstein, San Francisco Press, pp. 261-263.
6. H.M. Chan and F.J. Humphreys
"Effect of Particle Stimulated Nucleation on Orientation of Recrystallised Grains." *Metal Sci.*, 18 (1984) pp. 527-529.
7. H.M. Chan and D.B. Williams
"Quantitative Analysis of Lithium in Al-Li Alloys by Ionization Energy Loss Spectroscopy." *Phil. Mag. B*, 52 (1985) pp. 1019-1032.
8. H.M. Chan, M.P. Harmer, A. Bhalla and L.E. Cross
"TEM of the Relaxor Material Pb(Sc_{0.5}Ta_{0.5})O₃." *Jap. J. Appl. Phys.* 24 (1985) pp. 550-552.
9. C.M. Sung, H.M. Chan and D.B. Williams
"Quantitative Microanalysis of Li in Binary Al-Li Alloys." Proc. 3rd Conference on Al-Li Alloys, Oxford, July 1985, pp. 337-346.
10. H.M. Chan, S.F. Horvath and M.P. Harmer, "HRTEM of Ferroelectric Domains in Nb-Doped BaTiO₃," *Ceram. Bull.* 65 (1986) 1134
11. H.M. Chan, M.P. Harmer and D.M. Smyth
"Compensating Defects in Highly Donor-Doped BaTiO₃." *J. Amer. Cer. Soc.* 69 (1986) pp. 507-510.
12. Y.H. Hu, H.M. Chan, X.W. Zhang and M.P. Harmer
"SEM and TEM of Ferroelectric Domains in Doped BaTiO₃." *J. Amer. Cer. Soc.* 69 (1986) pp. 594-602.
13. M.P. Harmer, H.M. Chan and D.M. Smyth
"Compositional Control of Ceramic Microstructures: An Overview." Proc. Mat. Res. Soc. Symp. 60 (1986) pp. 125-134.

14. A.J. Gorton, J. Chen, H.M. Chan, D.M. Smyth, M.P. Harmer and I. Burn
"Microstructure and Properties of PMN Ceramics - Influence of Powder Purity." Proc. Sixth IEEE Int. Symp. on Application of Ferroelectrics (1986) pp. 150-152.
15. J. Chen, A.J. Gorton, H.M. Chan and M.P. Harmer
"Effect of Powder Purity and Second Phases on the Properties of Lead Magnesium Niobate Ceramics." J. Amer. Cer. Soc. 69 (1986) pp. C303-305.
16. H.M. Chan and M.P. Harmer
"Microstructures of High Dielectric Constant Materials," in "Ceramic Microstructures '86." Eds. J. Pask and A.G. Evans, Plenum Publishing Corporation, New York, NY, 1987, pp. 739-748.
17. H.M. Chan and B.R. Lawn
"Indentation Deformation and Fracture of Sapphire." J. Amer. Cer. Soc. 71 (1988) pp. 29-35.
18. C.P. Albert, H.M. Chan, S.J. Bennison and B.R. Lawn
"Temperature Dependence of Hardness of Alumina-Based Ceramics." J. Amer. Cer. Soc. 71 (1988) pp. C371-373.
19. T.W. Coyle, H.M. Chan and U.V. Deshmukh
"Effect of Heat Treatments in Air on the Microstructure, Fiber/Matrix Interface, and Mechanical Behavior of a LAS Glass-ceramic Matrix SiC- fiber Composite." Proceedings of the Second International Conference on Composite Interfaces, Cleveland, OH, June 1988. Elsevier Science, New York, 1988, pp. 489-501.
20. S.J. Bennison, H.M. Chan and B.R. Lawn
"Effect of Heat Treatment on Crack Resistance Curves in a Debased Alumina." J. Amer. Cer. Soc., 72 (1989) pp. 677-79.
21. L.C. Stearns, M.P. Harmer and H.M. Chan
"Microstructure Stabilization in $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$." Ceramic Bulletin, 68 (1989) p. 1448.
22. J. Chen, H.M. Chan and M.P. Harmer
"Ordering Structure and Dielectric Properties of Undoped and La/Na Doped $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$." J. Amer. Cer. Soc., 72 (1989) pp. 593-98.
23. L.J. Zhang, M.P. Harmer and H.M. Chan
"Formation of Grain-boundary Carbon-containing Phase During Annealing of $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$." J. Amer. Cer. Soc., 72 (1989) pp. 1997-2000.
24. M.P. Harmer, J. Chen, P. Peng, H.M. Chan and D.M. Smyth
"Control of Microchemical Ordering in Relaxor Ferroelectrics and Related Compounds." Ferroelectrics, 97 (1989) pp. 263-74.
25. A.J. Gorton, C.M. Sung, H.M. Chan, D.M. Smyth and M.P. Harmer
"Effect of SiO_2 and ZrO_2 on the Microstructure and Properties of $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$." Proc. Symp. on Dielectric Materials, Indianapolis, IN, April 1989. Ceramic Trans., 8 (1990) pp. 116-122.
26. E.P. Butler, T.R. Palamides, E.R. Fuller and H.M. Chan

- "Debonding and Frictional Effects During Fiber Pull-Out in Model SiC Fiber Reinforced Glass Composites in Relation to Fracture Resistance." Proc. 28th Annual Conference of Metallurgists, Halifax, Nova Scotia, Canada.
27. J.D. French, M.P. Harmer, H.M. Chan and G.A. Miller
"Coarsening-Resistant Dual-Phase Interpenetrating Microstructures." J. Amer. Ceram. Soc., 73 (1990) pp. 2508-10.
 28. L. Zhang, H.M. Chan and M.P. Harmer
"Seeding Induced Aligned Microstructures (S.I.A.M.) in $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$." Mat. Res. Soc. Symp. Proc. Vol. 169 (1990) pp. 271-74.
 29. J.D. French, H.M. Chan, M.P. Harmer and G.A. Miller
"Mechanical Properties and Grain Growth Inhibition in the System $\text{Al}_2\text{O}_3\text{:c-ZrO}_2$." Proc. Symposium N, "Interfaces in Composites." Materials Research Society, Boston, MA (1989). Eds. C. Pantano and E. Chen, MRS, Pittsburgh 1990, pp. 239-243.
 30. N.P. Padture, H.M. Chan, B.R. Lawn and M.J. Readey
"The Role of Crystallization of an Intergranular Glassy Phase in Determining Grain Boundary Residual Stresses in Debased Aluminas." Proc. Symposium N, "Interfaces in Composites." Materials Research Society, Boston, MA (1989). Eds. C. Pantano and E. Chen, MRS, Pittsburgh 1990, pp. 245-250.
 31. E.R. Fuller, Jr., E.P. Butler and H.M. Chan
"Interface Micromechanics and Toughening Properties of Ductile Interface Layers in Ceramic Matrix Composites." Proc. Symposium N, " Interfaces in Composites." Materials Research Society, Boston, MA (1989). Eds. C. Pantano and E. Chen, MRS, Pittsburgh 1990, pp. 17-24.
 32. L.C. Stearns, M.P. Harmer and H.M. Chan
"Effects of Inclusions on Sintering: A Study in $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$." J. Amer. Ceram. Soc., 73 (1990) pp. 2740-42.
 33. N.P. Padture and H.M. Chan
"Influence of Grain Size and Degree of Crystallization of Intergranular Glassy Phase on the Mechanical Behavior of a Debased Alumina." J. Mats. Sci. 26 (1991) pp. 2711-15.
 34. N.P. Padture and H.M. Chan
"Crystallization of Synthetic Anorthite." Ceram. Bull. 69 (1990) p. 1275.
 35. N.P. Padture, S.J. Bennison, J.L. Runyan, J. Rödel, H.M. Chan, and B.R. Lawn
"Flaw Tolerant $\text{Al}_2\text{O}_3\text{-Al}_2\text{TiO}_5$ Composites." Proc. of Symposium on Composites: Processing, Microstructure and Properties, held in Orlando, FL, Nov. 1990.
 36. L.C. Stearns, M.P. Harmer and H.M. Chan
"Effect of a Liquid Phase on the Sintering of Heterogeneous $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ Compacts". J. Amer. Cer. Soc. 74 (1991) pp. 2175-79.
 37. N.P. Padture and H.M. Chan
"On the Constrained Crystallization of Synthetic Anorthite ($\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot 2\text{SiO}_2$)." J. Mater. Res. 7 (1992) pp. 170-77.

38. J.D. French, H.M. Chan, M.P. Harmer and G.A. Miller
"Mechanical Properties of Interpenetrating Microstructures: The $\text{Al}_2\text{O}_3/\text{c-ZrO}_2$ System." J. Amer. Cer. Soc. 75 (1992) pp. 418-23.
39. M.P. Harmer, H.M. Chan and G.A. Miller
"Unique Opportunities for Microstructural Engineering with Duplex Ceramics." Ceramic Transactions, 22, American Ceramic Society (1991) p. 617.
40. N.P. Padture and H.M. Chan
"Improved Flaw Tolerance in Alumina-1 vol% Anorthite via Crystallization of the Intergranular Glass." J. Amer. Cer. Soc. 75 (1992) pp. 1870-75.
41. N. Khasgiwale and H.M. Chan
"High Temperature Indentation Studies on the {110} Plane of Single Crystal MgO ." J. Amer. Cer. Soc. 75 (1992) pp. 1924-28.
42. M.P. Harmer, H.M. Chan and G.A. Miller
"Unique Opportunities for Microstructural Engineering with Duplex and Laminar Ceramic Composites." J. Amer. Cer. Soc. 75 (1992) pp. 1715-28.
43. J.D. Stanescu and H.M. Chan
"Indentation Study of Fracture Toughness Anisotropy in Cubic Zirconium Oxide Single Crystals." J. Mats. Sci. Lett. 11 (1992) pp. 1364-66
44. C.A. Bateman, L. Zhang, H.M. Chan and M.P. Harmer
"A Mechanism for the Peritectic Reaction and Growth of Aligned Grains in $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$." J. Amer. Cer. Soc. 75 (1992) pp. 1281-83
45. C.J. Russo, M.P. Harmer, H.M. Chan and G.A. Miller
"Design of a Laminated Ceramic Composite for Improved Strength and Toughness." J. Amer. Cer. Soc. 75 (1992) pp. 3396-400
46. J. Zhao, L.C. Stearns, M.P. Harmer, H.M. Chan, G.A. Miller, and R.F. Cook
"Mechanical Behavior of Al_2O_3 - SiC Nanocomposites." J. Am. Ceram. Soc. 76 (1993) pp. 503-10
47. N.P. Padture, S.J. Bennison and H.M. Chan
"Flaw-Tolerance and Crack-Resistance Properties of Alumina-Aluminum Titanate Composites with Tailored Microstructures." J. Amer. Cer. Soc. 76 (1993) pp. 2312-20
48. C.F. Chen, M.E. Perisse, A.F. Ramirez, N.P. Padture and H.M. Chan
"Effect of Grain Boundary Phase on the Thermal Conductivity of Aluminum Nitride Ceramics." J. Mater. Sci. 29 (1994) pp. 1595-1600
49. C.J. Russo, M.P. Harmer, H.M. Chan, and G.A. Miller
"Mechanical Properties of Laminated Ceramic Composites in Alumina- and Zirconia-Based Systems." Ceramic Eng. and Sci. Proc. 14 (1993) pp. 998-1005.
50. Y.L. Chen, L. Zhang, H.M. Chan and M.P. Harmer
"Controlled Heterogeneous Nucleation of Melt-Textured $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ by Addition of Al_2O_3 Particles." J. Mater. Res. 8 (1993) pp. 2128-33.

51. H.M. Chan, M.P. Harmer and G.A. Miller
"Application of Scanning Electron Microscopy to the Study of Multi-Phase Ceramic Composites." Proc. 51st Ann. Mtg. MSA, Eds. G.W. Bailey and C.L. Rieder, San Francisco Press, San Francisco, CA, 1993, pp. 946-47.
52. N. Khasgiwale and H.M. Chan
"Magnesium Oxide" (Review Article)
"Encyclopedia of Advanced Materials", Eds. D. Bloor, R.J. Brook, M.C. Flemings, S. Mahajan and R.W. Cahn, Pergamon Press, Oxford, 1994, pp. 1414-18.
53. A.M. Thompson, H.M. Chan, M.P. Harmer and R.F. Cook
"Crack Healing and Stress Relaxation in Al_2O_3 -SiC Nanocomposites"
J. Am. Ceram. Soc. 78 (1995) pp. 567-71.
54. N. Khasgiwale and H.M. Chan
"Indentation Induced Crack Nucleation and Propagation in Single Crystal MgO"
Acta Metall. et Mater. 43 (1995) pp. 207-15.
55. M.P. Harmer and H.M. Chan
"Fired Microstructures and their Characterization", in Materials Science & Technology, Volume 17 B, "Processing of Ceramics: Part II", Ed. R.C. Brook, VCH, Weinheim, Germany (1996), pp. 177-213.
56. J.D. French, Z. Zhao, M.P. Harmer, H.M. Chan and G.A. Miller
"Creep of Duplex Microstructures", J. Am. Ceram. Soc.. 77 (1994) pp. 2857-65
57. J.D. French, H.M. Chan, M.P. Harmer and G.A. Miller
"High Temperature Fracture Toughness of Duplex Microstructures"
J. Am. Ceram. Soc. 79 (1996) pp. 58-64.
58. J. Fang, H.M. Chan and M.P. Harmer
"Residual Stress Relaxation Behavior in Al_2O_3 -SiC Nanocomposite"
Mat. Sci. and Eng. A195 (1995) pp. 163-67.
59. J. Fang, H.M. Chan and M.P. Harmer
"TEM Investigation of Surface Residual Stress Relaxation in Al_2O_3 and Al_2O_3 - SiC Nanocomposite," Proc. 52nd Ann. Mtg. MSA, Eds. G.W. Bailey and A.J. Garratt-Reed, San Francisco Press Inc., San Francisco, CA, 1994, pp. 628-29
60. V. Saikumar, H.M. Chan and M.P. Harmer
"Investigation of Ferroelectrics Using Conventional and In-Situ Electron Microscopy," Proc. 52nd Ann. Mtg. MSA, Eds. G.W. Bailey and A.J. Garratt-Reed, San Francisco Press Inc., San Francisco, CA, 1994, pp. 586-7
61. D.G. Brandon, D. Chen and H.M. Chan
"Control of Texture in Monolithic Alumina"
Mat. Sci. and Eng. A195 (1995) pp. 189-96.
62. Y.L. Chen, H.M. Chan, M.P. Harmer, V.R. Todt, S. Sengupta and D. Shi
"A New Method for Net-Shape Forming of Large, Single Domain $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ "
Physica C. 234 (1994) pp. 232-36.

63. A.M. Thompson, J. Fang, H.M. Chan and M.P. Harmer
"High Temperature Behavior of $\text{Al}_2\text{O}_3\text{:SiC}$ 'Nanocomposites'", Ceram. Trans. 51 (1995) pp. 671-79.
64. S. Wu, S.P. Gaus, H.M. Chan, H.S. Caram, and M.P. Harmer "Modeling, Sintering, Microstructure, and Mechanical Properties of RBAO Ceramics," Ceram. Trans. 56 (1995) pp. 209-18.
65. L. An, H.M. Chan, and K.K. Soni
"Control of Calcium Hexaluminate Grain Morphology in In Situ-Toughened Ceramic Composites," J. Mater. Sci. 31 (1996) pp. 3223-29
66. L. An, H.M. Chan, N.P. Padture and B.R. Lawn
"Damage-Resistant Alumina-Based Layer Composites," J. Mater. Res. 11 (1996) 204-210
67. J. Fang, A.M. Thompson, M.P. Harmer and H.M. Chan
"Sintering Behavior of Ultra-High-Purity Al_2O_3 Doped with Y and La"
"Sintering Technology", Eds. R.M. German, G.L. Messing and R.G. Cornwall, Marcel Dekker, NY 1996, pp. 317-324
68. F.J. Alves, H.M. Chan and M.P. Harmer
"Coarsening Behavior of an Alumina-Zirconia Composite (AZ50) Containing Liquid Phase", in "Sintering Technology", Eds. R.M. German, G.L. Messing and R.G. Cornwall, Marcel Dekker, NY 1996, pp. 373-380
69. F.J. Humphreys and H.M. Chan
"Discontinuous and Continuous Annealing Phenomena in an Aluminium-Nickel Alloy", Materials Science & Technology, 12 (1996), pp.143-48
70. A.M. Thompson, K.K. Soni, H.M. Chan, M.P. Harmer, D.B. Williams, J.M. Chabala and R. Levi-Setti, "Dopant Distributions in Rare-Earth-Doped Al_2O_3 "
J. Amer. Ceram. Soc., 80 (1997) pp. 373-76
71. J. Fang, M.P. Harmer, H.M. Chan
"Evaluation of Subgrain Formation in Al_2O_3 - SiC Nanocomposites"
J. Mater. Sci., 32 (1997) pp. 3427-33
72. A.M. Thompson, H.M. Chan and M.P. Harmer
"Tensile Creep of Al_2O_3 - SiC Nanocomposites"
J. Am. Ceram. Soc., 80 (1997) pp. 2221-28
73. S.P. Gaus, H.M. Chan, M.P. Harmer, and H.S. Caram
"Modeling of the Reaction Bonding of Aluminum Oxide"
J. Euro. Ceram. Soc., 17 (1997) pp. 2221-28
74. S. Wu, H.S. Caram, H.M. Chan, and M.P. Harmer
"Processing, Sintering Behavior, and Mechanical Properties of Reaction-Bonded $\text{Al}_2\text{O}_3/\text{ZrO}_2$ Ceramics," in "Sintering Technology", Eds. R.M. German, G.L. Messing and R.G. Cornwall, Marcel Dekker, NY 1996, pp. 465-72

75. M.P. Harmer, H.S. Caram, H.M. Chan, S.P. Gaus and S. Wu
"Reaction Bonded Metal Oxide (RBMO) Technology for Electronic Ceramics," Proceedings of the 7th U.S.-Japan Seminar on Dielectric and Piezoelectric Ceramics, in press, 1995.
76. I.A. Chou, H.M. Chan, and M.P. Harmer
"Machining Induced Surface Residual Stress Behavior in Al₂O₃ - SiC Nanocomposites," J. Am. Ceram. Soc. 79 (1996) pp. 2403-409
77. J. Fang, A.M. Thompson, M.P. Harmer and H.M. Chan
"Effect of Y and La on the Sintering Behavior of Ultra-High-Purity Al₂O₃"
J. Amer. Ceram. Soc. 80 (1997) pp. 2005-12
78. L. An and H.M. Chan
"R-Curve Behavior of In-Situ Toughened Al₂O₃:CaAl₁₂O₁₉ Ceramic Composites,"
J. Amer. Ceram. Soc. 79 (1996) pp. 3142-48.
79. S.P. Gaus, H.M. Chan, M.P. Harmer and H.S. Caram
"Temperature Runaway and Scale-Up of the Reaction Bonding of Aluminum Oxide," Proc. 20th Annual Cocoa Beach Conference, Cocoa Beach, Florida, January 1996.
80. M.P. Harmer, J.-J. Kim, F.J. Alves and H.M. Chan
"Effect of Liquid Phase on Microstructural Coarsening in Ceramic Systems"
Proc. Workshop on Fine Ceramics, Nagoya, Japan, March 1996.
81. L. An, S. Wu, H.M. Chan, M.P. Harmer and D.G. Brandon
"Alumina Platelet Reinforced Reaction Bonded Aluminum Oxide (RBAO) Composites: Textured and Random," J. Mater. Res., 12 (1997) pp. 3300-06
82. J. Cho, J.M. Rickman, M.P. Harmer, H.M. Chan and J. Bruley
"Creep Behavior of Doped Aluminum Oxide: Experimental Results and Computer Simulation,"
in "Proc. of the 1996 World Federation Meeting of Korean Scientists and Engineers, (Seoul, Korea, June, 1996)," Korean Federation of Science and Tech. Socs., Seoul, Korea, 1996, pp. 1839-51
83. A.A. DiGiovanni, H.M. Chan and M.P. Harmer
"The Use of Hertzian Contact in Determining Coating Thickness," J. Mater. Sci. Lett., 16 (1997)
pp. 363-67
84. K. Barmak, S.W. Banovic, H.M. Chan, L.E. Friedersdorf, M.P. Harmer, A.R. Marder, C.M. Petronis, D.G. Puerta and D.F. Susan, "Electrochemical Processing of Layered Composite Coatings of Nickel-Aluminum-Alumina/Alumina-Yttria Stabilized Zirconia," Proc. Symp. P, "Electrochemical Modification and Synthesis of Materials", Mats. Res. Soc. Symp. Proc. Vol. 451, Materials Research Society, 1997, pp. 469-74
85. J. Cho, M.P. Harmer, H.M. Chan, J.M. Rickman and A.M. Thompson
"Effect of Y and La on the Tensile Creep Behavior of Aluminum Oxide," J. Amer. Ceram. Soc., 80 (1997) pp. 1013-17
86. K. Barmak, S.W. Banovic, H.M. Chan, L.E. Friedersdorf, M.P. Harmer, A.R. Marder, C.M. Petronis, D.G. Puerta and D.F. Susan, "Processing and Properties of Electrodeposited Functionally Graded Composite Coatings of Ni-Al-Al₂O₃ , in " FGM '96, Proc. 4th Int. Symp. on

- Functionally Gradient Materials, Tsukuba, Japan,” eds. I. Shiota, Y. Miyamoto, Elsevier, NY, 1997, pp. 227-32
87. A. Khan, H.M. Chan and M.P. Harmer
"Design of Complex Ceramic Microstructures for Improved Mechanical Properties Through Synergy," in "Proceedings of the International Workshop on Synergy Ceramics," Fine Ceramics Research Association, pp. 14-17, 1996.
 88. H.M. Chan (*Invited Review*)
"Layered Ceramics: Processing and Mechanical Behavior," *Ann. Rev. Mats. Sci.*, Vol. 27, pp. 249-82 (1997).
 89. Y.Z. Li, M.P. Harmer, H.M. Chan and J.M. Rickman
"Grain Boundary Chemistry and Creep Resistance of Alumina"
"Ceramic Microstructures: Control at the Atomic Level," Eds. A.P. Tomsia and A. Glaeser, Plenum Press, New York NY, pp. 815 - 22
 90. S. Wu, H.M. Chan and M.P. Harmer
"Reaction Forming of Water-Based Mullite Ceramics"
J. Amer. Ceram. Soc., 80 (1997) pp. 1579-82
 91. I.A. Chou, H.M. Chan and M.P. Harmer
"The Effect of Annealing Environment on the Crack Healing and Mechanical Behavior of SiC Reinforced Alumina Nanocomposites," *J. Amer. Ceram. Soc.*, 81 (1998) pp. 1203-208
 92. J. Bruley, J. Cho, J.C. Fang, A.M. Thompson, Y.Z. Li, H.M. Chan, M.P. Harmer and J.M. Rickman, "STEM Analysis of Grain Boundaries of Creep Resistant Y and La Doped Alumina," *J. Amer. Ceram. Soc.*, 82 (1999) pp. 2865-70
 93. T. Li, A.M. Scotch, H.M. Chan, M.P. Harmer, S.E. Park, T.R. ShROUT and J.R. Michael,
"Single Crystals of PMN-35 mol.% PT from Polycrystalline Precursors", *J. Amer. Ceram. Soc.*, 81 (1998) pp. 244-48
 94. M.P. Harmer, H.M. Chan and J.M. Rickman,
"Grain Boundary Chemistry and Creep Resistance of Alumina," *Proc. AFOSR Contractors' Meeting on Structural Ceramics, Cincinnati, OH, May 8-9, 1998*, pp. 121-23.
 95. A. Khan, H.M. Chan, M.P. Harmer and R.F. Cook,
"Toughness-Curve Behavior of an Alumina-Mullite Composite", *J. Amer. Ceram. Soc.*, 81 (1998) pp. 2613-23
 96. M.P. Harmer, H.M. Chan, J.M. Rickman, J. Cho and Y.-Z. Li,
"Grain Boundary Chemistry and Creep Resistance of Alumina," *Proc. Workshop on Computer-Aided Design of High Temperature Materials, Santa Fe, NM, July 30 - August 2, 1997*, Eds. A. Pechenik, P. Vashishta and R. Kalia, Oxford University Press, pp. 18-33
 97. M.P. Harmer, H.M. Chan, T. Li, F. Meschke and A.M. Scotch,
"Relaxor Single Crystals from Polycrystalline Precursors," *Proc. 8th U.S. - Japan Seminar on Dielectric and Piezoelectric Ceramics, Plymouth, MA, October 1997*, pp.244-47
 98. J. Bruley, J. Cho, M.P. Harmer and H.M. Chan, "Application of Nano-Scale EELS Spectrum Lines to Grain Boundaries," pp. 941-42 in *Proc. Microscopy and Microanalysis '97*. Eds. G.W.

- Bailey, R.V.W. Dimlich, K.B. Alexander, J.J. McCarthy and T.P. Pretlow. Springer, New York NY, 1997.
99. M.J. Watson, H.M. Chan, M.P. Harmer and H.S. Caram, "Effects of Milling Liquid on the Reaction Bonded Aluminum Oxide Process," J. Amer. Ceram. Soc., 81 (1998) pp.2053-60
 100. J. Cho, H.M. Chan, M.P. Harmer and J.M. Rickman, "Influence of Yttrium Doping on Grain Misorientation in Aluminum Oxide," J. Amer. Ceram. Soc., 81 (1998) pp. 3001-4
 101. Y.-Z. Li, C. Wang, H.M. Chan, J.M. Rickman, M.P. Harmer, J.M. Chabala, K.L. Gavrilov and R. Levi-Setti, "Codoping of Alumina to Enhance Creep Resistance," J. Amer. Ceram. Soc., 82 (1999) pp.1497-504
 102. S.P. Gaus, M.P. Harmer, H.M. Chan and H.S. Caram, "Controlled Firing of Reaction-Bonded Aluminum Oxide (RBAO) Ceramics, Part I: Continuum-Model Predictions," J. Amer. Ceram. Soc., 82 (1999) pp. 897-908
 103. S.P. Gaus, P.M. Sheedy, H.S. Caram, H.M. Chan and M.P. Harmer, "Controlled Firing of Reaction-Bonded Aluminum Oxide (RBAO) Ceramics, Part II: Experimental Results," J. Amer. Ceram. Soc., 82 (1999) pp. 909-15
 104. L. An, H.-C. Ha and H.M. Chan, "High Strength Alumina/Alumina:Calcium-Hexaluminate Layer Composites," J. Amer. Ceram. Soc., 81 (1998) pp. 3321-24
 105. M.P. Harmer, H.M. Chan, J.M. Rickman, J. Cho and C.M. Wang, "Grain Boundary Chemistry and Creep Resistance of Oxide Ceramics," in *"The Science of Engineering Ceramics II,"* Eds. K. Niihara, T. Sekino, E. Yasuda and T. Sasa, Trans Tech. Publ. Ltd., Switzerland, 1998, pp. 139-44
 106. A. Khan, H.M. Chan, M.P. Harmer and R.F. Cook, "Toughening of an Alumina-Mullite Composite by Unbroken Bridging Elements", J. Amer. Ceram. Soc., 83 (2000) pp. 833-40
 107. A.A. DiGiovanni, H.M. Chan, M.P. Harmer and H.F. Nied, "The Synergistic Effects of Porosity and Glass on Quasi-Ductility Under Hertzian Contact in LPS Alumina," J. Amer. Ceram. Soc., 82 (1999) pp. 749-52
 108. J. Cho, J.M. Rickman, H.M. Chan and M.P. Harmer, "Modeling of Grain-Boundary Segregation Behavior in Aluminum Oxide," J. Amer. Ceram. Soc., 83 (2000) pp. 344-52
 109. J. Cho, C. Wang, H.M. Chan, J.M. Rickman and M.P. Harmer, "Role of Segregating Dopants on the Improved Creep Resistance of Aluminum Oxide," Acta. Met. et. Mat., 47 (1999) 4197-207
 110. M.P. Harmer, H.M. Chan, A. Khan, T. Li, S. Wu and A.M. Scotch, "Relaxor Based Single Crystals by Seeded Polycrystal Conversion," Proc. 9th U.S. - Japan Seminar on Dielectric and Piezoelectric Ceramics, Okinawa, Japan, Nov. (1999), pp.103-7

111. A. Khan, F. Meschke, T. Li, A.M. Scotch, H.M. Chan and M.P. Harmer, "Growth of $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - 35 mol.% PbTiO_3 Single Crystals From (111) Substrates by Seeded Polycrystal Conversion," *J. Amer. Ceram. Soc.*, 82 (1999) 2958-62
112. Y. Guo and H.M. Chan, "Influence of Texture on Hertzian Indentation Behavior of Alumina," *J. Mater. Sci. Lett.*, 19 (2000) 327-30
113. C. Wang, G.S. Cargill III, M.P. Harmer, H.M. Chan and J. Cho, "Atomic Structural Environment of Grain Boundary Segregated Y and Zr in Creep Resistant Alumina from EXAFS," *Acta. Mater.*, 47 (1999) pp.3411-22
114. T. Li, S. Wu, A. Khan, A.M. Scotch, H.M. Chan and M.P. Harmer, "Hetero-Epitaxial Growth of Bulk Single Crystal $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - 32 mol.% PbTiO_3 From (111) SrTiO_3 ," *Mater. Res. Lett.*, 14 (1999) 3189-91
115. H.-Y. Lee, H.M. Chan and M.P. Harmer, "Abnormal Grain Growth Induced by Excess PbO in $(65)\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - $(35)\text{PbTiO}_3$ Ceramics," *Journal of the Korean Ceramic Society*, 35 (1998) pp. 905-10
116. K. McNeal, C. Near, R. Gentilman, M. Harmer, H. Chan, A. Scotch, V. Venkataramani and C. Greskovich, "Processing and Application of Solid State Converted High Strain Materials," *Proc. SPIE's 6th Annual Int. Symp. on Smart Structures and Materials*, Newport, CA, March 1999.
117. A. Khan, H.M. Chan, M.P. Harmer and R.F. Cook "Alumina Agglomerate Effects on Toughness-Curve Behavior of Alumina-Mullite Composites," *J. Amer. Ceram. Soc.*, 83 (2000) 833-40
118. C.M. Wang, J. Cho, H.M. Chan, M.P. Harmer and J.M. Rickman "Influence of Dopant Concentration on Creep Properties of Nd_2O_3 Doped Alumina," *J. Amer. Ceram. Soc.*, 84 (2001) pp. 1010-16
119. J. Cho, C. Wang, H.M. Chan, J.M. Rickman and M.P. Harmer, "Improved Tensile Creep Properties of Yttrium- and Lanthanum-Doped Alumina: A Solid Solution Effect," *J. Mater. Res.*, 16 (2000) 425-29
120. C. Wang, G.S. Cargill III, H.M. Chan and M.P. Harmer, "Structural Features of Y-Saturated and Supersaturated Grain Boundaries in Alumina," *Acta Mater.*, 48 (2000) pp.1-13
121. S.P. Gaus, M.P. Harmer, H.M. Chan and H.S. Caram, "Alumina-Aluminide Alloys (3A) Technology: I, Model Development," *J. Amer. Ceram. Soc.* 83 (2000) pp. 1599-605
122. S.P. Gaus, M.P. Harmer, H.M. Chan, H.S. Caram, J. Bruhn and N. Claussen, "Alumina-Aluminide Alloys (3A) Technology: II, Modeling of Ti_xAl_y - Al_2O_3 Composites Formation," *J. Amer. Ceram. Soc.* 83 (2000) pp. 1606-12
123. E.R. Leite, A. Khan, A.M. Scotch, H.M. Chan and M.P. Harmer, "An Analysis of the Single Crystal Growth in a Polycrystalline Matrix," "Sintering Science and Technology, Eds. R.M. German, G.L. Messing and R.G. Cornwall, Marcel Dekker, NY 2000, pp. 355-360

124. H.M. Chan, M.P. Harmer and J.M. Rickman, Reply to "Comment on 'Influence of Yttrium Doping on Grain Misorientation in Aluminum Oxide'," *J. Amer. Ceram. Soc.* 83 (2000) p. 1324
125. M.J. Watson, H.S. Caram, H.M. Chan, M.P. Harmer, Ph. Saucez, A. Vande Wouwer and W.E. Schiesser, "Two-Dimensional Model of a Reaction-Bonded Aluminum Oxide Cylinder," Chapter 12, "Adaptive Method of Lines," Eds. A. Vande Wouwer, Ph. Saucez and W.E. Schiesser, Chapman and Hall / CRC, Boca Raton, 2001, pp. 353-370
126. C. Wang, G.S. Cargill III, H.M. Chan and M.P. Harmer, "Structure of Y and Zr Segregated Grain Boundaries in Alumina," *Interface Science*, 8 (2000) pp. 243-55
127. P.M. Sheedy, H.S. Caram, H.M. Chan and M.P. Harmer, "Effect of ZrO_2 on the Reaction Bonding of Aluminum Oxide," *J. Amer. Ceram. Soc.*, 84 (2001) 986-90
128. C. Wang, G.S. Cargill III, H.M. Chan, M.P. Harmer and D.B. Williams, "Atomic Structural Environment of Grain Boundary Segregated Y in Creep Resistant Alumina," *Proc. IUMAS 2000*, July 9-14, Kailua-Kona, HA, 2000 IOP Publishing Ltd, pp. 151-2 (2000)
129. D.T. Carpenter, A. Khan, A.M. Scotch, H.M. Chan and M.P. Harmer, "Electron Backscatter Diffraction Analysis of $Pb(Mg_{1/3}Nb_{2/3})O_3$ - 35 mol.% $PbTiO_3$ Single Crystals Grown by Seeded Polycrystal Conversion," *J. Mater. Res.*, 16 (2001) pp. 694-700
130. M.J. Watson, M.P. Harmer, H.M. Chan and H.S. Caram, "Ignition Phenomena and Controlled Firing of Reaction-Bonded Aluminum Oxide," *Acta Mater.*, 49 (2001) pp. 1095-103
131. G.S. Cargill III, C.M. Wang, J.M. Rickman, H.M. Chan and M.P. Harmer, "Effect of Y and Zr Dopants on Grain Boundary Structure in Creep Resistant Polycrystalline Alumina," *Mats. Res. Soc. Symp.*, Vol. 654, pp. AA1.1.1 - AA1.1.6, Materials Research Society, Boston, MA (2001).
132. A.A. DiGiovanni, H.M. Chan, M.P. Harmer and H.F. Nied, "Micromechanics of Deformation in Porous Liquid Phase Sintered Alumina Under Hertzian Contact," *J. Amer. Ceram. Soc.*, 84 (2001) 1844-50
133. E.R. Leite, A. Khan, A.M. Scotch, T. Li, H.M. Chan, M.P. Harmer, S.F. Liu, S.E. Park, "Chemical Heterogeneity in PMN-35PT Ceramics and Effects on Dielectric and Piezoelectric Properties," *J. Amer. Ceram. Soc.*, 85 (2002) 3018-24
134. H.-C. Ha, H.M. Chan and H. Nied, "Hertzian Contact Behavior of Alumina-Based Trilayer Composites: Experimental Observation and FEM Analysis," *Acta Mater.*, 49 (2001) 2453-61
135. W.S. Tong, J.M. Rickman, H.M. Chan and M.P. Harmer, "Coble-Creep Response and the Variability of Grain Boundary Properties," *J. Mater. Res.*, 17 (2002) 348-52
136. C. Wang, G.S. Cargill III, H.M. Chan and M.P. Harmer, "X-Ray Absorption Near Edge Structure of Grain Boundary Segregated Y and Zr in Creep Resistant Alumina," *J. Amer. Ceram. Soc.*, 85 (2002) 2492-98

137. H. Park and H.M. Chan,
“A Novel Process for the Generation of Pristine Sapphire Surfaces,” *Thin Solid Films*, 422 (2002) 135-40
138. “Critical Issues in Single Crystal Growth of PMN:PT by Seeded Polycrystal Conversion,” H.M. Chan, M.P. Harmer, E.P. Gorzkowski, P.T. King A.M. Scotch and D.J. Rockosi, ISAF 2002, Proc. 13th IEEE Int. Symp. on Appls. of Ferroelectrics, Nara, Japan, May 28 - 31, 2002, Eds. G. White and T. Tsurumi, pp. 383-88
139. A. Khan, E.P. Gorzkowski, A.M. Scotch, E.R. Leite, H.M. Chan and M.P. Harmer,
“Influence of Excess PbO Additions on {111} Single Crystal Growth of $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - 35 mol.% PbTiO_3 by Seeded Polycrystal Conversion,” *J. Amer. Ceram. Soc.*, 86 (2003) 2176-81
140. P.T. King, E.P. Gorzkowski, A.M. Scotch, D.J. Rockosi, H.M. Chan and M.P. Harmer,
“Kinetics of {001} $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - 35 mol.% PbTiO_3 Single Crystals Grown by seeded Polycrystal Conversion,” *J. Amer. Ceram. Soc.*, 86 (2003) 2182-87
141. A. Verdooren, H.M. Chan, J.L. Grenestedt, M.P. Harmer and H.S. Caram,
“Production of Metallic Foams from Ceramic Foam Precursors,” in “Cellular Metals: Manufacture, Properties and Applications” Proc. MetFoam2003, Berlin, Germany, June 23-26, 2003, eds. J. Banhart, N. Fleck and A. Mortensen, pp. 243-48
142. C.-M. Wang, H.M. Chan and Martin P. Harmer,
“Effect of Nd_2O_3 Doping on the Densification and Abnormal Grain Growth Behavior of High Purity Alumina,” *J. Amer. Ceram. Soc.*, 87 (2004) 378-83
143. D.J. Rockosi, E.P. Gorkowski, P.T. King, A.M. Scotch, H.M. Chan and M.P. Harmer,
“Seeded Growth from Twinned and Untwinned Abnormal Grains of $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - 35 mol.% PbTiO_3 in a Matrix Containing PbO Additions,” *J. Am. Ceram. Soc.*, 87 (2004) 1339-42
144. J. Aaron, M. Abpamano, H.M. Chan, M.P. Harmer and H.S. Caram,
“A Phenomenological Description of the Rate of the Aluminum/Oxygen Reaction in the Reaction Bonding of Alumina,” *J. Europ. Ceram. Soc.*, 25 (2005) 3413-25
145. E.P. Gorzkowski, M. Watanabe, H.M. Chan and M.P. Harmer,
“Direct Measurement of Oxygen in Lead-Based Ceramics Using the ζ -Factor Method in an Analytical Electron Microscope,” *J. Mater. Sci.*, 39 (2004) 6735-41
146. A. Verdooren, H.M. Chan, J.L. Grenestedt, M.P. Harmer and H.S. Caram,
“Production of Metallic Foams from Ceramic Foam Precursors,” *Advanced Engineering Materials*, 6 (2004) 397-99
147. A. Verdooren, H.M. Chan, J.L. Grenestedt, M.P. Harmer and H.S. Caram,
“Fabrication of Ferrous Metallic Foams by Reduction of Ceramic Foam Precursors,” *J. Mats. Sci.*, 40 (2005) 4333-39
148. H. Park, H.M. Chan and R.P. Vinci, “Patterning of Sapphire Substrates Via a Solid State Conversion Process,” *J. Mater. Res.*, 20 (2005) 417-23
149. P.M. Sheedy, H.S. Caram, H.M. Chan and M.P. Harmer,

- “Effects of Aluminum and Zirconia Contents on the Sintering of Reaction Bonded Aluminum Oxide Ceramics,” *J. Amer. Ceram. Soc.*, 88 (2005) 2046-52
150. P.M. Sheedy, H.S. Caram, H.M. Chan and M.P. Harmer,
“Processing and Properties of ZrO_2 - Containing Reaction Bonded Aluminum Oxide with High Initial Aluminum Contents,” *J. Amer. Ceram. Soc.*, 88 (2005) 2040-45
151. M.J. Watson, H.M. Chan, M.P. Harmer and H.S. Caram,
“Feedback-Controlled Firing of Reaction-Bonded Aluminum Oxide,” *J. Amer. Ceram. Soc.*, 88 (2005) 3380-87
152. M.D. Drahus, H.M. Chan, J.M. Rickman and M.P. Harmer
“Densification and Grain Growth of Fe-Doped and Fe/Y Codoped Alumina: Effect of Fe Valency,” *J. Amer. Ceram. Soc.*, 88 (2005) 3369-73
153. S. Wu, H.M. Chan and M.P. Harmer,
“Effect of Alumina Additions on Microstructural Aspects of the β to α Transformation in Tantalum (V) Oxide,” *J. Am. Ceram. Soc.*, 88 (2005) 2369-73
154. K. Bedu-Amissah, J.M. Rickman, H.M. Chan and M.P. Harmer,
“Impact of Microstructure and Grain-Boundary Diffusion in Polycrystals,”
J. Appl. Phys., 98 (2005) 63511-6
155. S. Wu, H.M. Chan and M.P. Harmer,
“Compositional Tailoring of the Thermal Expansion Coefficient of Tantalum (V) Oxide,” *J. Mater. Sci.*, 41 (2006) 689-95
156. E.P. Gorzkowski, M. Watanabe, H.M. Chan and M.P. Harmer,
“Effect of Liquid Phase Chemistry on Single Crystal Growth in PMN-35PT,”
J. Am. Ceram. Soc., **89** (2006) 2286-94
157. E.P. Gorzkowski, H.M. Chan and M.P. Harmer,
“Effect of PbO on the Kinetics of $\{001\}$ $Pb(Mg_{1/3}Nb_{2/3})O_3$ - 35 mol.% $PbTiO_3$ Single Crystals Grown into Fully Dense Matrices,” *J. Am. Ceram. Soc.*, **89** (2006) 856-62
158. E. P. Gorzkowski, T. Sano, C.-S. Kim, G. S. Rohrer, H.M. Chan, and M.P. Harmer, “Changes in the Distribution of Interfaces in PMN-35mol% PT as a Function of Time,” *Z. Metallkd.*, **96** (2005) 207-210
159. A. Verdooren, H.M. Chan, J.L. Grenestedt, M.P. Harmer and H.S. Caram, “Fabrication of Low Density Ferrous Metallic Foams by Reduction of Chemically Bonded Ceramics,” *J. Am. Ceram. Soc.*, 89 (2006) 3101-6
160. J.M. Biser, J.T. Perkins, H. Li, H.M. Chan and R.P. Vinci, “Fabrication and Morphological Stability of Aluminum Nanostructures en route to Nanopatterned Sapphire,” *Advances in Science and Technology*, vol. 45, (2006) p. 945-950
161. K. Bedu-Amissah, J.M. Rickman, H.M. Chan and M.P. Harmer, “Grain Boundary Diffusion of Cr in Pure and Y-Doped Alumina,” *J. Am. Ceram. Soc.*, 90 (2007) 1551-5
162. S. Dutta, H.M. Chan and R.P. Vinci, “Sub-Surface Oxidation at the Aluminum-Sapphire Interface During Low Temperature Annealing,” *J. Amer. Ceram. Soc.*, 90 (2007) 2571-75

163. Y.K. Ee, R.A. Arif, N. Tansu, H. Li, H.M. Chan, R.P. Vinci, P. Capek, N.K. Jha, and V. Dierolf, "Improved Photoluminescence of InGaN Quantum Wells Grown on Nano-Patterned AGOG Sapphire Substrate by Metalorganic Vapor Phase Epitaxy," in *Proc. of the 20th IEEE Laser and Electro-Optics Society (LEOS) Annual Meeting 2007*, Lake Buena Vista, FL, October 21-25, 2007, pp. 902-3
164. H. Li, J.M. Biser, J.T. Perkins, S. Dutta, R.P. Vinci and H.M. Chan, "Thermal Stability of Cu Nanowires on Single Crystal Sapphire," *J. Appl. Phys.*, 103 (2008) 024315 1-9
165. H. Cheng, S.J. Dillon, H.S. Caram, J.M. Rickman, H.M. Chan and M.P. Harmer, "The Effect of Yttrium on Oxygen Grain Boundary Transport in Polycrystalline Alumina Measured Using Ni Marker Particles," *J. Amer. Ceram. Soc.*, 91 (2008) 2002-8
166. D. Browne, H. Li, E. Giorgi, S. Dutta, J. Biser, R.P. Vinci and H.M. Chan, "Templated Epitaxial Coatings on Magnesium Aluminate Spinel using the Sol-Gel Method", *J. Mater. Sci.*, 44 (2009) 1180-1186
167. Y.K. Ee, J. Biser, W. Cao, H.M. Chan, R.P. Vinci, and N. Tansu, "Metalorganic Vapor Phase Epitaxy of III-Nitride Light-Emitting Diodes on Nano-Patterned AGOG Sapphire Substrate by Abbreviated Growth Mode," *J. Selected Topics in Quantum Electronics*, IEEE J. Selected Topics in Quantum Electronics, 15 (2009) 1066-1072
168. Y.K. Ee, J. Biser, W. Cao, H.M. Chan, R.P. Vinci, and N. Tansu, "Growths of InGaN Quantum Wells Light-Emitting Diodes on Nano-Patterned AGOG Sapphire Substrate Using Abbreviated Growth Mode," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2009*, Baltimore, MD, June 2-4 2009.
169. H. Cheng, H.S. Caram, W.E. Schiesser, J.M. Rickman, H.M. Chan and M.P. Harmer, "Study on Oxygen Grain Boundary Transport in Polycrystalline Alumina Using Wedge-geometry Samples," *Acta Mater.*, 58 (2010) 2442-51
170. Y.K. Ee, X.H. Li, J. Biser, W. Cao, H.M. Chan, R.P. Vinci, and N. Tansu, "Abbreviated MOVPE Nucleation Studies of III-Nitride Light-Emitting Diodes on Nano-Patterned Sapphire," *J. Crystal Growth* 312(8), 2010, 1311-1315.
171. Y.K. Ee, X. H. Li, J. Biser, W. Cao, H.M. Chan, R.P. Vinci, and N. Tansu, "Abbreviated GaN Metalorganic Vapor Phase Epitaxy Growth Mode on Nano-Patterned Sapphire for Enhanced Efficiency of InGaN-Based Light-Emitting Diodes," in *Proc. of the SPIE Photonics West 2010, LEDs: Materials, Devices, and Applications for Solid State Lighting XIV*, San Francisco, CA, Jan 2010.
172. Y.K. Ee, X.H. Li, J. Biser, W. Cao, H.M. Chan, R.P. Vinci, and N. Tansu, "Growth Evolution and Time-Resolved Measurements of III-Nitride Light-Emitting Diodes Grown by Abbreviated Growth Mode on Patterned AGOG Substrate," in *Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2010*, San Jose, CA, May 2010.
173. S. Dutta, T.-B. Kim, T. Krentz, R.P. Vinci and H.M. Chan, "Sol-gel Derived Single Crystal Alumina Coatings with Vermicular Structure," *J. Amer. Ceram. Soc.*, 94 (2011) 340-3

174. W. Cao, J.M. Biser, Y.K. Ee, X.H. Li, N. Tansu, H.M. Chan and R.P. Vinci, "Dislocation Structure of GaN Films Grown on Planar and Nano-Patterned Sapphire," *J. Appl. Phys.*, 110 (2011) 053505 1-4
175. S. Dutta, J.M. Biser, R.P. Vinci and H.M. Chan, "Solid State Annealing Behavior of Aluminum Thin Films on Sapphire" *J. Amer. Ceram. Soc.*, 95 (2012) 823-30
176. G.S. Rohrer, M. Affatigato, M. Backhaus, R.K. Bordia, H.M. Chan, S. Curtarolo, A. Demkov, J.N. Eckstein, K.T. Faber, J.E. Garay, Y. Gogotsi, L. Huang, L.E. Jones, S.V. Kalinin, R.J. Lad, C.G. Levi, J. Levy, J.-P. Maria, L. Mattos Jr., A. Navrotsky, N. Orlovskaya, C. Pantano, J.F. Stebbins, T.S. Sudarshan, T. Tani and K.S. Weil, "Challenges in Ceramic Science: A Report from the Workshop on Emerging Research Areas in Ceramic Science," *J. Am. Ceram. Soc.*, 95 (2012) 1–14
177. Z. Yu, Q. Wu, J.M. Rickman, H.M. Chan and M.P. Harmer, "Atomic Scale Grain Boundary Faceting in Hf-Doped Alumina by Cs Corrected HAADF-STEM," *Microscopy and Microanalysis*, 18-S2 (2012) 414-15
178. Zhiyang Yu, Qian Wu, Helen M. Chan, Jeffrey M. Rickman, Martin P. Harmer "Reconstruction of Alumina Grain Boundary Structure at Atomic Scale by Aberration-corrected HAADF-STEM," *Proc. Microscopy and Microanalysis 2013*, Indianapolis, IN, Aug. 4-8, 2013
179. Z. Yu, Q. Wu, J.M. Rickman, H.M. Chan and Martin P. Harmer, "Atomic - Resolution Observation of Hf-doped Alumina Grain Boundaries," *Scripta Mat.* 68 (2013) 703-706
180. J.M. Rickman, H.M. Chan, M.P. Harmer and J. Luo, "Grain-boundary Layering Transitions in a Model Bicrystal," *Surface Science*, 618 (2013) 88-93
181. M. Kracum, A. Kundu, M.P. Harmer and H.M. Chan "Novel Interpenetrating Cu-Al₂O₃ Structures by Controlled Reduction of Bulk CuAlO₂" *J. Mater. Sci.*, 50 (2015) 1818-24
182. M. Moghadam, J.M. Rickman, M.P. Harmer and H.M. Chan "The Role of Boundary Variability in Polycrystalline Grain-Boundary Diffusion" *J. Appl. Phys.*, 117 (2015) 045311-9 <http://dx.doi.org/10.1063/1.4906778>
183. Q. Wu, H.M. Chan, J.M. Rickman, and M.P. Harmer "Effect of Hf⁴⁺ Concentration on Oxygen Grain-Boundary Diffusion in Alumina," *J. Am. Ceram. Soc.*, 98 (2015) 3346-51
184. M.M. Moghadam, J.M. Rickman, M.P. Harmer and H. M. Chan "Orientational Anisotropy and Interfacial Transport in Polycrystals," *Surface Science*, 646 (2016) 204-209. <http://dx.doi.org/10.1016/j.susc.2015.06.011>
185. Z. Yu, M. Kracum, A. Kundu, M.P. Harmer, H.M. Chan "Microstructural Evolution of a Cu and θ -Al₂O₃ Composite Formed By Reduction of Delafossite CuAlO₂: A HAADF-STEM Study," *Crystal Growth and Design*, 16 (2016) 380–385 DOI: 10.1021/acs.cgd.5b01362
186. J.M. Rickman, M.P. Harmer and H.M. Chan "Grain-Boundary Layering Transitions and Phonon Engineering," *Surface Science*, 651 (2016) 1-4

187. H. Maret, D. Weisberg, H.M. Chan, and N.C. Strandwitz, "Seeded Solid Phase Epitaxy of Atomic Layer Deposited Aluminum Oxide, "Crystal Growth and Design, 16 (2016) 1662-1666. [10.1021/acs.cgd.5b01744](https://doi.org/10.1021/acs.cgd.5b01744)

Patents

"Method for Growing Single Crystals from Polycrystalline Precursors,"
M.P. Harmer, H.M. Chan, H.-Y. Lee, A.M. Scotch, T. Li, F. Meschke and A. Khan,
U.S. Patent # 6048394, issue date 4/11/2000

An Abbreviated Epitaxial Growth Mode (AGM) Method for Reducing Cost and Improving Quality of LEDs and Lasers," N. Tansu, H.M. Chan, R.P. Vinci, Y.-K. Ee, J. Biser
US Provisional Patent Application No. 61/287,353.
Filed Dec. 17, 2010

Invited Talks and Contributed Presentations

Dr. Chan has given over 110 invited presentations at conferences, universities and workshops, and is the co-author of more than 165 contributed talks.