

## THE UNIVERSITY OF BRITISH COLUMBIA

## PUBLICATIONS RECORD

Date of most recent revision  
(please initial):

NAME IN FULL (surname first): BANTHIA, Nemkumar

Nov 2009

DEPARTMENT OR SCHOOL: Civil Engineering

FACULTY: Applied  
Science**1. Books/Edited Volumes/Special Journal Issues:**

1. Banthia, N. and Mufti, A. (Editors), Advanced in Conservation of Heritage Structures, Proceedings of 3<sup>rd</sup> ISHMII Workshop, Aug 11-13, 2010, 497 pp.
2. Dubey, A. and Banthia, N. (Editors), Fiber Reinforced Concrete in Practice, ACI Special Publication No. 268, American Concrete Institute, Detroit, Michigan, CD-ROM, March 2010.
3. Banthia, N. (Guest Editor), Special Issue of the Indian Concrete Journal on Fiber Reinforced Concrete, 83 (10), Oct. 2009, 52 pp.
4. Sonoda, Y., Banthia, N., and Fujikake, K., Structures under Extreme Loading, proc. 2<sup>nd</sup> International Workshop on Performance, Protection and Strengthening of Structures under Extreme Loading, Shonan Village, Hayama, Japan, Aug. 19-21, 2009, Published by The National Defense Academy, Japan, 2009.
5. Banthia, N., Mindess, S., and Fujikake, K. (Eds.), Structures under Extreme Loading, Proc. 1<sup>st</sup> International Workshop on Performance, Protection and Strengthening of Structures under Extreme Loading, Whistler, BC, Aug. 20-22, 2007, Published by University of British Columbia.
6. Toutlemond, F., Sakai, K., Gjørsv, O., and Banthia, N. (Eds.), Concrete under Severe Conditions: Environment and Loading, Proceedings of the 5<sup>th</sup> International Conference on Concrete under Severe Conditions of Environment and Loading, CONSEC'07, Tours, France, June 4-6, 2007.
7. Banthia, N., Benmokrane, B. and Karbhari, V. (Eds.), Research Monograph: Durability of Fiber Reinforced Polymers in Civil Infrastructure, Published by Canadian Network of Centers of Excellence on Intelligent Sensing for Innovative Structures (NCE-ISIS), ISIS Canada, 2007, pp. 248.
8. Mufti, A., Neale, K., Shrive, N. and Banthia, N. (Guest Editors), Special issue of Canadian J. of Civil Engineering on Intelligent Sensing for Innovative Structures (ISIS, Canada), 34(3), 2007. pp. 267-471.
9. Srivastava, V., Singh, M., Banthia, N. and Mufti, A. (Eds.), Proceedings of 3<sup>rd</sup> Inter. Conference on Recent Advances in Composite Materials, New Delhi, BHU Press, Feb 2007, 1428, pp.
10. Banthia, N. and Mufti, A. (Eds.), Innovative Bridge Deck Technologies, Proc. International Workshop on Innovative Bridge Deck Technologies, September 2005, 263pp.
11. Banthia, N., Uomoto, T. Bentur, A., and Shah, S.P. (Eds.), Construction Materials, Proc. Int. Conf. on Construction Materials (ConMat'05) and Mindess Symposium, University of British Columbia, Vancouver, BC, August 2005, Abstracts + CD ROM, 484 pp.
12. Oh, B.H., Sakai, K., Gjørsv, O. and Banthia, N. (Eds.), Concrete Under Severe Conditions: Environment and Loading IV, Proc. 4<sup>th</sup> International Conference, Seoul, 2004, 2333 pp (2 Volumes), Korea Concrete Institute, 2004.
13. Lok, T.S., and Banthia, N. (Eds.) Fiber Reinforced Materials, Proc. Asia Pacific Specialty Conference, Changsha, China, 2003.

14. Banthia, N. (Guest Editor), Special Issue of the Indian Concrete Institute Journal on FRP in Concrete Construction, Vol. 3, No. 4, Jan. 2003, 69 pp.
15. Brett, P., Banthia, N. and Buckland, P. (Eds.), Proc. 6<sup>th</sup> International Conference on Short and Medium Span Bridges, Canadian Society for Civil Engineering, SMSB- VI, Vancouver, 2002, 1509 pp.
16. Banthia, N., Tatnall, P., Criswell, M. and Folliard, K. (Eds.), Fiber Reinforced Concrete: Innovations for Value, ACI SP-216, American Concrete Institute, 2003, pp. 240.
17. Banthia, N., Sakai, K. and GjØrv, O.E., (Eds.), Concrete Under Severe Conditions: Environment and Loading III, Proceedings of the International Conference, CONSEC'01, Vancouver, University of BC., 2001, 2403pp
18. Shah, S.P. and Banthia, N., (Eds.), High Performance Cement-Based Thin Sheet Products, American Concrete Institute, Special Technical Publication, SP-190, 2000, 214 pp.
19. Banthia, N., MacDonald, C. and Tatnall, P. (Eds.), Structural Applications of Fiber Reinforced Concrete, American Concrete Institute, Special Technical Publication, SP 182, American Concrete Institute, 1999, 257 pp.
20. GjØrv, O.E., Sakai, K. and Banthia, N. (Eds.), Concrete Under Severe Conditions: Environment and Loading II, Proceedings of the International Conference, CONSEC'98, Norway, E&FN SPON, United Kingdom, 1998, 2208pp.
21. Banthia, N. (Guest Editor), Special issue of J. of Cem. & Concr. Composites (UK) on FRC Under Severe Conditions of Environment and Loading, Elsevier Applied Science, 1998, 20pp.
22. Banthia, N., Bentur, A. and Mufti, A., (Eds.), Fiber Reinforced Concrete: Present and Future, CSCE, October 1998, 217 pp.
23. Stevens, D.J., Banthia, N., Gopalratnam, V.S. and Tatnall, P. (Eds.), Testing of Fiber Reinforced Concrete, ACI Special Publication No. 155, American Concrete Institute, Detroit, Michigan, 1995, 254 pp.
24. Sakai, K., Banthia, N. and GjØrv, O.E. (Eds.) Concrete Under Severe Conditions: Environment and Loading I, Proc., International Conference on Concrete Under Severe Conditions of Environment and Loading, Sapporo, CONSEC'95, Japan, E&FN SPON, United Kingdom, 1995, 1612 pp.
25. Banthia, N. and Mindess, S. (Eds.), Fiber Reinforced Concrete Modern Developments, Proc., 2nd University-Industry Workshop on Fiber Reinforced Concrete and Other Advanced Composites (Toronto, March 1995), University of British Columbia, 1995, 417 pp.
26. Banthia, N. (Ed.) Proc. of First Canadian University-Industry Workshop on Fiber Reinforced Concrete, Quebec City, 1991, 245 pp.

## **2. Refereed Journal Publications: (HQP Underlined)**

1. Kobayashi, K. and Banthia, N., Corrosion Detection in Reinforced Concrete using Induction Heating and Infrared Thermography, Int. J of Civil Structural Health Monitoring, in press, 2011 (DOI 10.1007/s13349-010-0002-4)
2. Banthia, N., Mindess, S. and Jiang, Z. Influence of Feedback Control on Flexural Toughness of Fiber Reinforced Concrete in ASTM C1399 Tests, ASTM Journal of Testing and Evaluations, American Society for Testing and Materials, 2011, in press.
3. Sappakittipakorn, S. and Banthia, N., Corrosion Control In RC Structures Using Fiber Reinforced Concrete, The Indian Concrete Journal, October 2010, pp. 7-20.
4. Talukdar, S. and Banthia, N., Performance of Sprayed Fiber Reinforced Polymer Strengthened Timber Beams, The Journal of Advances in Materials Science and Engineering, Advances in Materials Science and Engineering, Volume 2010 (2010), Article ID 498378, (doi:10.1155/2010/498378)
5. Hoseini, M., Bindiganavile, V., and Banthia, N., Correlating Water Permeability with Ultra-Sonic Pulse Velocity in Cementitious Mortars Subjected to Compressive Stress, J. of International Review of Civil Engineering, 1(2), May 2010.
6. Z.Jiang and N. Banthia, Size Effects in Flexural Toughness of Fiber Reinforced Concrete, J of Testing and Evaluation, ASTM, 38(3), May 2010, pp. 332-338.
7. Banthia, N., Abdolrahimzadeh, A., Demers, M., Mufti, A., and Sheikh, S., Durability of FRP-Concrete Bond in FRP-Strengthened Bridges: A Study on Four In-Service Bridges in Canada, ACI Concrete International, Aug 2010, pp. 45-51. .

8. Sappakittipakorn, M., Banthia, N. and Z. Jiang, Cyroporometry for Pore Size Characterization, *The Indian Concrete Journal*, June 2010, pp. 17-24.
9. Soleimani, S.M. and Banthia, N., Reinforced Concrete Beams under Impact Loading and Influence of a GFRP Coating, *J. of International Review of Civil Engineering*, 1(1), March 2010, pp 68-78.
10. Talukdar, S., Azhari, F., and Banthia, N., Can Fibers Replace WWM in Industrial Slabs on Grade?, *Journal of the Indian Concrete Institute*, 83 (10) , October 2009, pp. 11-17.
11. Hoseini, M., Bindiganavile, V., and Banthia, N., The Effect of Mechanical Stress on the Permeability of Concrete: A Review, *J. of Cement and Concrete Composites*, 31, June 2009, pp 213-220.
12. Cattaneo, S., Rosati, G. and Banthia, N., A simple model to Explain the Effect of Different Boundary Conditions in Direct Tensile Tests, *Construction and Building Materials*, 23, 2009, pp. 129-137.
13. Rokugo, K., Hatano, H. and Banthia, N., Report on the Collapse of de la Concorde Overpass in Canada, *Concrete Journal*, Japan Concrete Institute, 12(46), 2008. Pp. 35-41.
14. Turmo, J., Banthia, N., Gettu, R. and Barragán, B., Estudio del comportamiento a cortante de vigas de hormigon reforzado con fibras, *Materiales de Construcción*, October - December, 2008, 58(292): 00-00.
15. Banthia, N., and Gupta, R., Plastic Shrinkage Cracking in Cementitious Repairs and Overlays, *RILEM: J. of Materials and Structures*, On-Line, June 2008, 13 pp.
16. Higashiyama, H. and Banthia, N., Correlating Flexural and Shear Toughness of Lightweight Fiber Reinforced Concrete, *ACI Materials Journal*, 105(3), May-June 2008, pp. 251-257.
17. Bindiganavile, V. and Banthia, N., The Effect of Particle Density on its Rebound in Dry-Mix Shotcrete, *ASCE J of Materials in Civil Engineering*, 21(2), 2008, pp. 58-64. .
18. Banthia, N. and Gupta, R. Test Method for Evaluation of Plastic Shrinkage Cracking in Fiber Reinforced Cementitious Materials, *Experimental Techniques*, Nov-Dec 2007, pp. 44-48.
19. Bhargava, A. and Banthia, N., Permeability of Concrete with Fiber Reinforcement and Service Life Predictions, *RILEM, Materials and Structures*, 41, Jan 2008, pp. 363-372.
20. Banthia, N. and Sappakittipakorn, M., Toughness Enhancement in Steel Fiber Reinforced Concrete Through Fiber Hybridization, *J. of Cement and Concrete Research*, 37, Dec 2007, pp. 1366-1372.
21. Mufti, A.A., Onofrei, M., Benmokrane, B., Banthia, N., Boulfiza, M., Newhook, J.P., Bakht, B., Tadros, G. and Brett, P., Field Study of GFRP Durability in Concrete, *Canadian Journal of Civil Engineering*, Special NCE-ISIS Issue, 34(3), March 2007, pp. 355-366.
22. Mufti, A. A., Bakht, B., Banthia, N., Benmokrane, B., Desgagné, G., Eden, R., Erki, M.-A., Karbhari, V., Kroman, J., Lai, D., Machida, M., Neale, K., Tadros, G., Täljsten, B., New Canadian Highway Bridge Design Code Design Provisions for Fibre Reinforced Structures, *Canadian Journal of Civil Engineering*, Special NCE-ISIS Issue, 34(3), March 2007, pp. 267-283.
23. Chako, R., Banthia, N. and Mufti, A.A., Carbon Fiber Reinforced Cement Based Sensors, *Canadian Journal of Civil Engineering*, Special NCE-ISIS Issue, 34(3), March 2007, pp. 284-290.
24. Tennyson, R.C., Banthia, N., Rivera, E., Huffman, S., and Sturrock, I., Monitoring Structures using Long Gage-Length Fiber Optic Sensors, *Canadian Journal of Civil Engineering*, Special NCE-ISIS Issue, 34(3), March 2007, pp. 422-429.
25. Mufti, A.A., Banthia, N., Benmokrane, B., Boulfiza, and Newhook, Durability of GFRP Composite Rods in Field Structures, *ACI Concrete International*, 29(2), February, 2007, pp. 37-42.
26. Banthia, N. and Bindiganavile, V., Fiber-Reinforced Shotcrete: Comparing the Properties of Dry- and Wet-mix Shotcrete Reinforced with Steel Fibers, *ACI Concrete International*, 29(4), April 2007, pp. 53-58.
27. Banthia, N. and Bhargava, A., Permeability of Stressed Concrete and Role of Fiber Reinforcement, *ACI Materials Journal*, 104(1), Jan-Feb, 2007, pp. 303-309.
28. Banthia, N. and Gupta, R., Repairing with Fiber Reinforced Concrete, *ACI Concrete International*, 28(11), Nov 2006, pp. 36-40.
29. Bhargava, A., Banthia, N., and Biparva, A., An Experimental Technique for Measurement of Water Permeability of Stressed Concrete, *Experimental Techniques*, 30 (5), September-October 2006, pp. 28-31.
30. F. Maidzadeh, S.M. Soleimani, and N. Banthia, Shear Strength of Reinforced Concrete Beams with a Fiber Concrete Matrix, *Canadian Journal of Civil Engineering*, Special Issue Dedicated to Prof. Saeed Mirza, Volume 33, Number 6, June 2006, pp. 726-734.
31. Banthia, N. and Gupta, R., Influence of Polypropylene Fiber Geometry on Plastic Shrinkage Cracking in Concrete, *Cement and Concrete Research*, 36 (7), July 2006, pp. 1263-1267.

32. Higashiyama, H. and Banthia, N., Study on Shear Toughness of Fiber Reinforced Concrete under Direct Shear Test, *J. of the School of Science and Engineering*, Kinki University, Japan, 42, pp. 131-138, 2006.
33. Bindiganavile, V. and Banthia, N., Size Effects and the Dynamic Response of Plain Concrete', *ASCE J. of Materials in Civil Engineering*, July-August 2006, pp. 485-491.
34. Banthia, N., Gupta, R. and Mindess, S., Development of Fiber Reinforced Concrete Repair Materials, *Canadian J. of Civil Engineering*, 33 (2), February 2006, Pages 126-133
35. Banthia, N., Sprayed Fiber Reinforced Polymers: Coming to a Structure Near You." Special Issue on Technical Innovations, *Canadian Society Civil Engineering*, Winter 2005, pp. 8-11
36. Banthia, N., Biparva, A. and Mindess, S., Permeability of Concrete under Stress, *Cement and Concrete Research*, 35(9) September 2005, pp. 1651-1655.
37. Bindiganavile, V. and Banthia, N., Impact Response of the Fiber-Matrix Bond in Concrete, *Canadian J. of Civil Engineering*, 32(5), October 2005, pp. 924-933.
38. Bindiganavile, V. and Banthia, N., Generating Dynamic Crack Growth Resistance Curves for Fiber Reinforced Concrete, *Experimental Mechanics*, 45(2), April 2005, pp. 112-122.
39. Bindiganavile, V. and Banthia, N., Process Dependence of Shotcrete for Repairs, *International J. of Materials and Process Technology (IJMPT)*, 2005, 23(3/4) pp. 241-256.
40. Banthia, N. and Soleimani, S.M., Flexural Response of Hybrid Fiber Reinforced Cementitious Composites, *ACI Materials Journal*, 102(5), November-December 2005, pp. 382-389.
41. Sukontasukkul, P., Mindess, S., and Banthia, N., Properties of Confined Fiber Reinforced Concrete under Uniaxial Compressive Impact, *Cement and Concrete Research*, 35(1), 2005, pp. 11-18.
42. Bindiganavile, V. and Banthia, N., 'Discussion: "Size effect for high-strength concrete cylinders subjected to axial impact" by Krauthammer et al.', *International Journal of Impact Engineering*, 30 (7), 2004, pp. 873-875
43. Banthia, N. and Mindess, S., Toughness Characterization of Fiber Reinforced Concrete: Which Standard to Use? *ASTM, J. of Testing and Evaluation*, 2004, 32(2), pp. 138-139.
44. Banthia, N. and Gupta, R., Hybrid Fiber Reinforced Concrete: Fiber Synergy in High Strength Matrices, *RILEM, Materials and Structures*, 37(274), pp. 707-716, 2004.
45. Ross, S., Boyd, A.J., Johnston, M.M., Sexsmith, R.J. and Banthia, N., Deteriorated Concrete Bridge Retrofit with Glass Fiber Reinforced Polymers, *ASCE J. of Bridge Engineering*, 9(1), 2004, pp. 66-74.
46. Banthia, N. and Khalighi, Y., FRP-Concrete Bond: Issues and Challenges, *Indian Concrete Institute Journal*, Special Issue on FRP, 3(4), January 2003, pp. 35-41.
47. Boufiza, M., Sakai, K., Banthia, N. and Yoshida, H., Prediction of Chloride Ion Ingress in Uncracked and Cracked Concrete, *American Concrete Institute, Materials Journal*, 100(1), January-February 2003, pp. 38-48.
48. Banthia, N. and Nandakumar, N., Crack Growth Resistance of Hybrid Fiber Composites, *J. of Cement Composites (UK)*, 25(1), January 2003, pp. 3-9.
49. Bindiganavile, V. and Banthia, N., Impact Resistance of Ultra-High Strength Fiber Reinforced Cement Composites, *ACI Materials Journal*, 99(6), November-December, 2002, pp. 543-548.
50. Bindiganavile, V. and Banthia, N., Some Studies on the Impact Response of Fiber Reinforced Concrete, *J. of the Indian Concrete Institute*, 3(3), 2002, pp. 23-28.
51. Banthia, N. and Bindiganavile, V., Admixture Blends in Steel Fiber-Reinforced Dry-Mix Shotcrete, *ACI Concrete International*, 24(8), August 2002, pp. 49-53.
52. Mirsayah, A. and Banthia, N., Shear Strength of Steel Fiber Reinforced Concrete, *ACI Materials Journal*, 99(5), 2002, pp. 473-479.
53. Banthia, N. and Armelin, H.S., A Novel Double Anchored Fiber for Shotcrete, *Canadian J. of Civil Engineering*, 29(1), 2002, pp. 58-63.
54. Banthia, N., Nandakumar, N. and Boyd, A.J., Sprayed Fiber Reinforced Polymers: From Laboratory to a Real Bridge, *ACI Concrete International: Design and Construction*, 24(11), November 2002, pp. 47-52.
55. Banthia, N., Nandakumar, N. and Boyd, A.J., From the Laboratory to the Real World, Concrete Engineering, *Concrete Engineering*, Palladian Publication, UK, Spring 2002 pp. 35-37.
56. Sukontasukkul, P., S. Mindess, N. Banthia, and T. Mikami, "Impact Resistance of Laterally Confined Fibre Reinforced Concrete Plates," *Materials and Structures / Matériaux et Constructions, RILEM*, 34, December 2001, pp. 612-618.

57. Banthia, N. and Nandakumar, N., Crack Growth Resistance of Hybrid Fiber Reinforced Cement Composites, *J. of Materials Science Letters*, 20, 2001, pp. 1651-1653; *Cement & Concrete Composites*, 25, 2003, pp. 3-9.
58. Banthia, N. and Nandakumar, N., Crack growth resistance of concrete reinforced with a low volume fraction of polymeric fiber, *J. of Materials Science Letters*, 20, 2001, pp. 1651-1653
59. Bindiganavile, V. and Banthia, N., Fiber Reinforced Dry-Mix Shotcrete with Metakaolin, *J of Cement and Concrete Composites*, Invited paper, Special Issue on Metakolin (Ed. J. Pera), UK, 23(6), 2001, pp. 503-514.
60. Banthia, N. and Bindiganavile, V., Repairing with Hybrid-Fiber-Reinforced Concrete; *Concrete International, Design and Construction, ACI*, Vol. 23, No. 6, 2001, pp. 29-32.
61. Bindiganavile, V. and Banthia, N., Polymer and Steel Fiber Reinforced Cementitious Composites under Impact Loading, Part 1: Bond-Slip Response, *ACI Materials Journal*, 98(1), 2001, pp. 10-16.
62. Bindiganavile, V. and Banthia, N., Polymer and Steel Fiber Reinforced Cementitious Composites under Impact Loading, Part 2: Flexural Toughness, *ACI Materials Journal*, 98(1), 2001, pp. 17-24.
63. Banthia, N., and Boyd, A., Sprayed Fiber Reinforced Plastics for Repairs, *Canadian J. of Civil Engineering*, Special NCE-ISIS Issue, Vol. 27, 2000, pp. 907-915.
64. Banthia, N. and Yan, C., Shrinkage Cracking in Polyolefin Fiber Reinforced Concrete, *ACI Materials Journal*, 97(4), 2000, pp. 432-437.
65. Bouffiza, M., Banthia, N., and Sakai, K., Application of Continuum Damage Mechanics to Carbon Fiber-Reinforced Cement Composites, *ACI Materials Journal*, 97(3), 2000, pp. 245-253.
66. Banthia, N., and Chan, C., Use of Recycled Aggregate in Plain and Fiber Reinforced Shotcrete, *Concrete International: Design & Construction, ACI*, 22(6), June 2000, pp. 41-46.
67. Bakht, B., N. Banthia, ...et al, Canadian Bridge Design Code Provisions for Fiber-Reinforced Structures, *Journal of Composites for Construction*, 4(1), 2000, pp. 3-15.
68. Gupta, P., Banthia, N. and Yan, C., Fiber Reinforced Wet-Mix Shotcrete under Impact, *ASCE J. of Mat. In Civil Engineering*, 12(1), February 2000, pp. 81-90.
69. Bouffiza, M., Sakai, K., Banthia, N., and Yoshida, H., Prediction of Cracking Effect on the Penetration of Chloride Ions in Reinforced Concrete, *Japan Concrete Institute, Proceedings*, June, 2000, pp. 91-97.
70. Bouffiza, M., Sakai, K., Banthia, N., and Yoshida, H., An Integrated Analysis of Reinforced Concrete Beam Subjected to Both Loading and Chloride Ion Ingress, *Japan Concrete Institute, Proceedings*, Vol 21-23, pp. 1999, pp. 79-84.
71. Banthia, N., Gupta, P. and Yan, C., Impact Resistance of Fiber Reinforced Wet-Mix Shotcrete, Part 1: Beam Tests, *Materials and Structures, RILEM (Paris)*, 32, October 1999, pp. 563-570.
72. Banthia, N., Gupta, P. and Yan, C., Impact Resistance of Fiber Reinforced Wet-Mix Shotcrete, Part 2: Plate Tests, *Materials and Structures, RILEM (Paris)*, 32, November 1999, pp. 643-650.
73. Banthia, N., Dubey, A., Measurement of Flexural Toughness of Fiber Reinforced Concrete using a Novel Technique, Part 1: Assessment and Calibration, *ACI Materials Journal*, 96(6), Nov-December 1999, pp. 651-656.
74. Banthia, N., Dubey, A., Measurement of Flexural Toughness of Fiber Reinforced Concrete using a Novel Technique, Part 2: Performance of Various Composites, *ACI Materials Journal*, 97(1), January-February 2000, pp. 3-11.
75. Bindiganavile, V. and Banthia, N., Rebound in Dry-Mix Shotcrete: Influence of Type of Mineral Admixture, *ACI Materials Journal*, 97(2), March-April 2000, pp. 115-119.
76. Banthia, N., Gupta, P., Yan, C. and Morgan, R., How Tough is Fiber Reinforced Shotcrete? Part 1: Beam Tests, *Concrete International: Design & Construction, ACI*, June 1999, pp. 59-62.
77. Banthia, N., Gupta, P., Yan, C. and Morgan, R., How Tough is Fiber Reinforced Shotcrete? Part 2: Plate Tests, *Concrete International: Design & Construction, ACI*, August 1999, pp. 62-66.
78. Armelin, H.S., Banthia, N. and Mindess, S., Kinematics of Dry-Mix Shotcrete, *ACI Materials Journal*, 96(3), 1999, pp. 283-290.
79. Armelin, H.S. and Banthia, N., Steel Fiber Rebound in Shotcrete: Influence of Fiber Geometry, *ACI Concrete. International*, 20(9), 1998, pp. 74-79.
80. Banthia, N., Yan, C. and Sakai, K., Impact Resistance of Fiber Reinforced Concrete at Subnormal Temperatures, *J. of Cement and Concrete Composites* (Special issue, Ed. N. Banthia), 20, 1998, pp. 393-404.
81. Dubey, A. and Banthia, N., Influence of High Reactivity Metakaolin (HRM) and Silica Fume on the Flexural Toughness of High Performance Steel Fiber Reinforced Concrete, *ACI Materials Journal*, 95(3), 1998, pp. 284-292.
82. Armelin, H.S. and Banthia, N., Mechanics of Aggregate Rebound in Shotcrete (Part 1), *RILEM Materials and Structures (Paris)*, 31, March 1998, pp. 91-98.

83. Armelin, H.S. and Banthia, N., Development of a General Model of Aggregate Rebound for Dry-Mix Shotcrete (Part 2), *RILEM Materials and Structures* (Paris), 31, April 1998, pp. 195-202.
84. Banthia, N., Yan, C. and Sakai, K., Impact Resistance of Concrete Plates Reinforced with an FRP Grid, *ACI Materials J.*, 95(1), 1998, pp.11-18.
85. Armelin, H.S., Banthia, N., Morgan, D.R. and Steeves, C., Rebound in Dry-Mix Shotcrete, *ACI-Concrete International*, 19(9), 1997, pp. 54-60.
86. Armelin, H.S. and Banthia, N., Predicting the Flexural Post-Cracking Performance of Steel-Fiber Reinforced Concrete from the Pull-Out of Single Fibers, *ACI Material Journal*, 94(1), 1997, pp. 18-31.
87. Banthia, N., Micro-fiber Reinforced Cement Composites (invited paper), *Indian Concrete Journal*, September 1996, pp. 1-10.
88. Banthia, N. and Yan, C., Bond-Slip Characteristics of Steel Fibres in HRM Modified Cement Matrices, *Cement and Concrete Research*, 26(5), 1996, pp. 657-662.
89. Banthia, N., Yan, C. and Mindess, S., Restrained Shrinkage Cracking in Fiber Reinforced Concrete: A Novel Test Technique, *Cement and Concrete Research*, 26(1), 1996, pp. 9-14.
90. Pigeon, M., Pleau, R., Azzabi, M. and Banthia, N., Durability of Microfiber-Reinforced Mortars, *Cement & Concrete Res.*, 26(4), 1996, pp. 601-609.
91. Heere, R., Morgan, D.R., Banthia, N. and Yogendran, Y., Evaluation of Shotcrete Repaired Concrete Dams in British Columbia, *ACI Concrete International*, 18(3), 1996, pp. 24-33.
92. Banthia, N., Mindess, S., and Trottier, J.-F., Impact Resistance of Steel Fiber Reinforced Concrete, *ACI Materials J.*, 93(5), 1996, pp. 472-479.
93. Banthia, N. and Sheng, J., Fracture Toughness of Micro-Fiber Reinforced Cement Composites, *Cement and Concrete Composites*, 18, 1996, pp. 251-269.
94. Banthia, N., M. Al-Asaly and Ma, S., Behaviour of Concrete Slab Reinforced with Fiber Reinforced Plastic Grid, *ASCE, J. of Mat. In Civil Engineering*, 7(4), 1995, pp., 252-257.
95. Banthia, N., Moncef, A., Chokri, K. and Sheng, J., Uniaxial Tensile Response of Microfiber Reinforced Cement Composites, *Materials and Structures RILEM*, 28, 1995, pp. 507-517.
96. Banthia, N. and Trottier, J.-F., Concrete Reinforced with Deformed Steel Fibers, Part II: Toughness Characterization, *ACI Materials Journal*, 92(2), 1995, pp. 146-154.
97. Banthia, N. and Trottier, J.-F., Test Methods of Flexural Toughness Characterization of FRC's: Some Concerns and a Proposition, *ACI Materials Journal*, 92(1), 1995, pp. 48-57.
98. Banthia, N., Sheng, J., Moncef, A. and Chokri, K., Microfibre Reinforced Cement Composites, Part 2: Flexural Response and Fracture Growth Studies, *Can. J. of Civil Eng.*, August 1995, pp. 668-682.
99. Katzensteiner, B., Mindess, S., Filiatrault, A. and Banthia, N., Dynamic Tests of Steel Fiber Reinforced Concrete Frames, *Concrete International*, 16( 9), Sept. 1994, pp. 57-60.
100. Banthia, N., Moncef, A., Chokri, K. and Sheng, J., Micro-Fibre Reinforced Cement Composites, Part I: Uni-axial Tensile Response, *Can. J. of Civil Eng.*, Dec. 1994, pp. 999-1011.
101. Banthia, N. and Trottier, J.-F., Concrete Reinforced with Deformed Steel Fibers, Part I: Bond-Slip Mechanisms, *ACI Materials J.*, 91( 5), Sept.-Oct. 1994, pp. 435-446.
102. Banthia, N., Trottier, J.-F., Beaupré, D. and Wood, D., Properties of Steel Fiber Reinforced Shotcrete, *Canadian J. of Civil Eng.*, 21( 4), 1994, pp. 564-575.
103. Banthia, N., Trottier, J.-F. and Beaupré, D., Technical Note: Steel Fiber Reinforced Shotcrete: Comparisons with Cast Concrete, *ASCE J. of Materials in Civil Eng.*, 6( 3), 1994, pp. 430-437.
104. Trottier, J.-F. and Banthia, N., Toughness Characterization of Steel Fiber Reinforced Concrete, *ASCE J. of Materials in Civil Eng.*, (6) 2, 1994, pp. 264-289.
105. Banthia, N., Chokri, K., Ohama, Y. and Mindess, S., Fiber-Reinforced Cement Based Composites Under Tensile Impact, *J. of Adv. Cement Based Composites*, Vol. 1, 1994, pp. 131-141.
106. Banthia, N. and Dubeau, S., Carbon and Steel Micro-Fiber Reinforced Cement Based Composites for Thin Repairs, *ASCE J. of Materials in Civil Eng.*, 6(1), 1994, pp. 88-99.
107. Banthia, N., Trottier, J.-F., Beaupré, D. and Wood, D., Influence of Fiber Geometry in Steel Fiber Reinforced Wet-Mix Shotcrete, *ACI Concrete Int.-Design and Construction*, 16(6), 1994, pp. 27-32.
108. Banthia, N., Azzabi, M., and Pigeon, M., Restrained Shrinkage Cracking in Fiber Reinforced Cementitious Composites, *Materials and Structures RILEM* (Paris), 26 (161), 1993, pp. 405-413.

- 
109. Banthia, N. and Mani, M., Toughness Indices of Steel Fiber Reinforced Concrete at Sub-Zero Temperatures, *Cement and Concrete Research*, 23 (4), July 1993, pp. 863-873.
  110. Bordeleau, D., Pigeon, M., and Banthia, N., Comparative Study of Latex-Modified Concretes and Normal Concretes Subjected to Freezing and Thawing in the Presence of a Deicer Salt Solution, *ACI Materials J.*, 89 (6), 1992, pp. 547-553.
  111. Banthia, N., Steel Fiber Reinforced Concrete at Sub-Zero Temperatures: From Micromechanics to Macromechanics, *J. of Materials Science Letters*, 11, 1992, pp. 1219-1222.
  112. Banthia, N. and Trottier, J.-F., Micromechanics of Steel Fiber Pull-Out: Rate Sensitivity at Very Low Temperatures, *Cement & Concrete Composites (UK)*, 14, 1992, pp. 119-130.
  113. Banthia, N., Dieridane, S. and Pigeon, M., Electrical Resistivity of Carbon and Steel Micro-Fiber Reinforced Cements, *Cement & Concrete Research*, 22(5), 1992, pp. 804-814.
  114. Banthia, N., Trottier, J.-F., Wood, D. and Beaupré, D., Steel Fiber Dry-Mix Shotcrete: Influence of Fiber Geometry, *Concrete Int.: Design and Construction, ACI.*, Vol. 14, No. 5, May 1992, pp. 24-28.
  115. Mallikarjuna, Fafard, M. and Banthia, N., A new three-dimensional interface (contact) element for fiber pull-out behavior in composites, *Computers & Structures*, Volume 44, Issue 4, 3 August 1992, Pages 753-764.
  116. Pigeon, M., Plante, P., Pleau, R. and Banthia, N., The Influence of Soluble Alkalis on the Production and Stability of Air Void System in Superplasticized and Non-superplasticized Concretes, *ACI Materials J.*, 89(1), 1992, pp. 24-31.
  117. Banthia, N., Pitch-Based Carbon Fiber Reinforced Cements: Structure, Performance, Applications and Research Needs, *Can. J. of Civil Eng.* 19(1), pp. 26-38, 1992.
  118. Banthia, N., Pigeon, M., Marchand, J. and Boisvert, J., Permeability of Roller Compacted Concrete, *ASCE J. of Materials in Civil Eng.*, 4(1), Feb. 1992, pp. 27-40.
  119. Banthia, N., Temperature Sensitivity of Steel Fiber Pull-Out from Cement Based Matrices, *J. of Materials Science Letters* 10, 1991, pp. 448-450.
  120. Banthia, N. and Trottier, J.-F., Deformed Steel Fiber-Cementitious Matrix Bond under Impact, *Cement and Concrete Research*, 21, 1991, pp. 158-161.
  121. Banthia, N., A Study of Some Factors Affecting the Fiber-Matrix Bond in Steel Fiber Reinforced Concrete, *Can. J. of Civil Eng.*, 17(4), 1990, pp. 610-620.
  122. Banthia, N. and Krishnadev, M.R., Steel Fiber-Cementitious Matrix Load Relaxation Studies Using a Screw Driven Testing Machine, *Experimental Techniques*, 14(2), 1990, pp. 41-44.
  123. Chanvillard G., Banthia, N. and Aitcin, P.C., Normalized Load-Deflection Curves for Fiber Reinforced Concrete Under Flexure, *Cement & Concrete Composites*, 12(1), 1990, pp. 41-46.
  124. Banthia, N. and Pigeon, M., Load Relaxation in Steel Fibers Embedded in Cementitious Matrices, *Int. J. of Cement Composites (UK)*, 11(4), November 1989, pp. 229-234.
  125. Banthia, N. and Mindess, S., Water Permeability of Cement Paste, *Cement & Concrete Research (USA)*, 19(5), 1989, pp. 727-736.
  126. Banthia, N., Pigeon, M. and Lachance, L., Calorimetric Study of Freezable Water in Cement Paste, *Cement and Concrete Research (USA)*, 19(6), 1989, pp. 939-950.
  127. Banthia, N., Pigeon, M. and Trottier J.-F., Steel Fiber-Cementitious Matrix Bond Studies at High Stress Rates, *Experimental Techniques (USA)*, 13(7), July 1989, pp. 19-22.
  128. Banthia, N. and Mindess, S., Effect of Early Freezing on Permeability of Cement Paste, *J. of Materials in Civil Eng., ASCE*, 1(3), August 1989, pp. 119-132.
  129. Banthia, N., Mindess, S., Bentur, A. and Pigeon, M., Impact Testing of Concrete Using a Drop-Weight Impact Machine, *Experimental Mechanics*, 29(2), 1989, pp. 63-69.
  130. Banthia, N. and Trottier, J.-F., Effects of Curing Temperature and Early Freezing on the Pull-Out Resistance of Steel Fibers Cementitious Matrix, *Cement and Concrete Res. (USA)*, 19(4), July 1989, pp. 400-410.
  131. Banthia, N. and Foy, C., Marine Curing of Steel Fiber Composites, *J. of Materials in Civil Eng., ASCE*, 1(2), May 1989, pp. 86-96.
  132. Foy, C., Pigeon, M. and Banthia, N., Freeze-Thaw Durability and Deicer Salt Scaling Resistance, *Cement and Concrete Research (USA)*, 18(4), 1988, pp. 604-614.
  133. Banthia, N., Mindess, S. and Bentur, A., Impact Behavior of Concrete Beams, *Materials and Structures (RILEM) Paris*, 20(119), 1987, pp. 293-302.
  134. Mindess, S., Banthia, N. and Bentur, A., The Response of Reinforced Concrete Beams with a Fibrous Concrete Matrix to Impact Loading, *Int. J. of Cement Composites*, 8(3), 1986, pp. 165-170.

135. Banthia, N., Mindess, S., and Cheng, Y., The Fracture Toughness of Concrete under Impact Loading, *Cement and Concrete Research* (USA), 17(2), 1987, pp. 321-241.
136. Banthia, N., Mindess, S. and Bentur, A., High Stress-Rate Testing of Concrete: An Overview, *The Indian Concrete J.*, 60(10), 1986, pp. 265-270.
137. Bentur, A., Mindess, S. and Banthia, N., The Behavior of Concrete under Impact Loading: Experimental Procedure and Method of Analysis, *Materials and Structures, RILEM*, 19(113), 1986, pp. 371-378.

### 3. Papers Submitted to Refereed Journals

1. Azhari, F. and Banthia, N., Cement-Based Sensors with Carbon Fibers and Carbon Nanotubes for Piezoresistive Sensing, *Int. J of Cement and Concrete Composites*, Dec 2010, Submitted.
2. Azhari, F. and Banthia, N., Electrically Conductive Cementitious Composites with Nanotubes, *Int. J of Cement and Concrete Research*, Dec 2010, Submitted.
3. Banthia, N. and Darracott, W., Recycled Glass Fibers for Shrinkage Crack Control in Concrete, *J. of Materials Science Letters*, April 2010, Submitted.
4. Talukdar, S., Shaikh, T.S. and Banthia, N., Development of a Lightweight Low Carbon Footprint Concrete Containing Recycled Waste Materials, Special Issue: Use of Recyclable Materials in Sustainable Civil Engineering Applications, *J of Advances in Civil Engineering*, Hindawi Publishing, Submitted, April 2011.
5. Sappkittipakorn, M. and Banthia, N., Corrosion of Rebar and Role of Fiber Reinforced Concrete, *ASTM, J of Testing and Evaluation*, Submitted, April 2011.

### 4. Patents

1. Banthia, N., Hingson, R., and Dubey, A. (Inventors), Fibers Having Improved Sinusoidal Configuration, Concrete Reinforcing therewith and the Related Method, US Patent # 5981630, Issued November 9, 1999.
2. Banthia, N. and Armelin, H.S. (Inventors), Concrete Reinforcing Fiber, US Patent # 5965277, Issued October 12, 1999. The patent covers a family of metal fibers for shotcrete reinforcement. An option agreement is in place with Synthetic Industries. In May 2000, the company agreed to license the technology. Based on the market size, it is anticipated that the arrangement will bring over \$1 million in royalty to UBC in the next five years.
3. Banthia, N. and M.R. Krishnadev (Inventors), Metal Fiber with Optimized Geometry for Reinforcing Cement Based Materials, US Patent # 5443918, issued August 22, 1995; Patent registered in 26 other countries. Patent covers a family of high performance steel fibres for reinforcing concrete. Tricon Ltd. Of Toronto has licensed the technology. Fibers produced based on this patent have exceeded all commercial fibers in Canada based on sales.

### 5. Other Refereed Publications:

1. Banthia, N., Smart Concrete, Intelligent Structures, *Innovation*, Magazine of the Association of Professional Engineers and Geoscientists of BC, January-February, 2011, pp. 30-31.
2. Banthia, N., Khalighi, Y and Banthia, N., A Study of FRP–Concrete Bond under Impact, Proc. Workshop on *Protection & Strengthening of Structures under Extreme Loading*, Protect2011, Lugano, Switzerland, 2011.
3. Banthia, N., Keynote, Impact Response of Cementitious Composites, Proc. International Workshop on *Protection and Strengthening of Structures under Extreme Loading*, Protect2011, Lugano, Switzerland, 2011
4. Banthia, N., Keynote, Impact and Blast Resistance of Fiber Reinforced Concrete—Some Misconceptions, Proc. JSCE Impact Symposium, Fukuoka City, Dec 14-16, 2010.
5. Azhari, F and Banthia, N., Structural Health Monitoring using Piezoresistive Cementitious Composites, Session in Honor of Prof. Koji Sakai, Proc. Second International Conference on Sustainable Construction Materials and Technologies (SCMT-II), Università Politecnica Della Marche, Ancona, Italy, June 28-30, 2010.

6. Kobayashi K. and Banthia, N., Detection of reinforcement corrosion with a new non-destructive test method using induction heating, Proc. Sixth Inter. Conf. on Concrete Under Severe Conditions (Eds. Castro-Borghes et al), Merida, Mexico, 2009. 2010
7. Banthia, N. and Azhari, F., Chemo/Piezo-Resistive Cement-Based Sensors For Real-Time Structural Health Monitoring of Historic Structures, Proc. Inter. Workshop on Conservation of Heritage Structures using FRMs and SHM (CSHM-3), Org by Int Soc for SHM of Infrastructure (ISHMII), Ottawa, Canada Aug 11-13, 2010.
8. Banthia, N., Multifunctional Fiber Reinforced Cementitious Composites', Invited Paper, Proc. Sixth Materials Science and Technology Conference (MSAT-6), Bangkok, Aug 26-27, 2010.
9. Banthia, N., Azhari, F and Raheja, B., Invited Paper, Piezoresistive Cement-Based Sensors for Real-Time Structural Health Monitoring of Structures During Earthquakes, Proc. 7th CUEE and 5th ICEE Joint Conference, Tokyo Institute of Technology, March 3-5, 2010.
10. Banthia, N., Keynote Paper, Fiber Reinforced Concrete for Sustainable and Intelligent Infrastructure, SBEIDCO – 1<sup>st</sup> International Conference on Sustainable Built Environment Infrastructures in Developing Countries, ENSET Oran, Algeria, October 12-14, 2009
11. Talukdar, S., Azhari, F. and Banthia, N., A Performance Comparison between FRC and WWM Reinforced Slabs on Grade, Proc. 4th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII-4), Organized by International Society for Structural Health Monitoring of Intelligent Infrastructure, ETH Zurich, 22 -24 July 2009.
12. Banthia, N., Abdolrahimzadeh, A., Neale, K.W., Labossière, P., Demers, M., Mufti, A. A., Murison, Saltzberg, W. and Sheikh, S.A., Bond Durability of FRP Repairs in Bridges, Proc. 4th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII-4), Organized by International Society for Structural Health Monitoring of Intelligent Infrastructure, ETH Zurich, 22 -24 July 2009.
13. Banthia, N., Khalighi, Y and Mindess, S., Impact Response of FRP-Concrete Bond, Proc. Performance, Protection & Strengthening of Structures under Extreme Loading, Protect 2009, Shonan Village Center, Hayama, Japan, August 19-21, 2009.
14. Sappakittipakorn, M. and Banthia, N., Thermoporometry-Based Characterization of Pore Structure in Fiber Reinforced Cementitious Composites, Proc. 4th International Conference on Construction Materials: Performance, Innovations and Structural Implications (ConMat'09), Nagoya, JCI, 24-26 August 2009.
15. Banthia, N., Abdolrahimzadeh, A., Assessment of FRP-Concrete Bond using Active Thermography, Proc. 4th International Conference on Construction Materials: Performance, Innovations and Structural Implications (ConMat'09), Nagoya, JCI, August 24-26 2009.
16. Boulfiza, M. and Banthia, N., A Reactive Transport-Based Model for Predicting the Service Life of GFRP Rods in Concrete, Proc. 4th International Conference on Construction Materials: Performance, Innovations and Structural Implications (ConMat'09), Nagoya, JCI, 24-26 August 2009.
17. Banthia, N., Invited Paper, Piezoresistive FRCs with High Toughness and Dynamic Sensing Abilities for Earthquake Resistant Structures, 6th International Conference on Urban Earthquake Engineering (CUEE-6), March3-4, 2009, Tokyo, Japan.
18. Banthia, N., Invited Paper, Fiber Reinforced Concrete for the Arabian Gulf, Proceedings of Advances in Concrete Technology in the Middle-East, Dubai, UAE, November 19 – 20, 2008.
19. Banthia, N., Keynote Paper, Durability Enhancements in Concrete with Fiber Reinforcement, Proc. 15th Jubilee Slovenian Colloquium on Concrete, Ljubljana, September 9, 2008 (in Slovenian).
20. Banthia, N., Keynote Paper, Current Innovations in Fiber Reinforced Concrete, Proc. 3<sup>rd</sup> Asian Concrete Federation (ACF) International Conference, Ho Chi Minh City, Vietnam, 11- 13 November, 2008, pp. 1-15.
21. Banthia, N., Keynote Paper, Bio-Inspired Fiber Reinforced Cementitious Composites for Smart, Sustainable Civil Infrastructure, Proc. 8th International Congress on Advances in Civil Engineering, ACE 2008 (Eds. Özgür Eren, Abdulrezak Mohamed, Ali Günayakti, Erdinç Soyer, Huriye Bilsel, and Mehmet M. Kunt), Sept. 15-17, 2008, Eastern Mediterranean University, Famagusta, North Cyprus, pp. 5-32.

22. Banthia, N., Keynote Paper, Can Advanced Non-Destructive Testing of Structures Avoid Collapses?, *In Proc. 3rd International Workshop on Lifetime Engineering of Civil Infrastructure—Honoring the Career of Prof. S. Hamada* (Eds. A. Miyamoto, S. Hamada and S.-H. Lee), Ube City, Japan, July 22-24, 2008, pp. 111-128.
23. Banthia, N., Gupta, R., and Dyer, P., Health Monitoring of Fiber Reinforced Concrete Overlays at the ChemBioE Building, The 3rd International Conference on Structural Health Monitoring of Intelligent Infrastructure Vancouver, British Columbia, Canada, November 2007, ISIS Canada CD-ROM.
24. Banthia, N., Invited Paper, Enhancing Impact and Blast Resistance of Structures with Fiber Reinforcement, in Resilience of Cities to Terrorist and Other Threats: Lessons Learnt from 9/11 and Further Research Issues, *Proc. NATO Advanced Research Workshop*, Springer, Moscow, RUSSIA, 16-18 July, 2007, pp. 171-188.
25. Bindiganavile, V. Zagaj, S., Kramar, D. and Banthia, N., Impact Response of Steel Fiber Reinforced Lightweight Aggregate Concrete: Preliminary Results, *Proc. of Protect2007 Workshop*, Whistler, University of BC, 2007, CD-ROM.
26. Mikami, T., Sukontasukkul, P., Mindess, S. and Banthia, N., Impact Response of a Simply Supported Plain Concrete Slab, *Proc. of Protect2007 Workshop*, Whistler, University of BC, 2007, CD-ROM.
27. Gupta, R. and Banthia, N., Effect of Open-Loop or Closed-Loop Deflection Control on Measured Toughness of FRC, in *Proc. Deflection and Stiffness Issues in FRC and Thin Structural Elements*, ACI-SP-248, American Concrete Institute, Fall 2007, pp. 67-82.
28. Boulfiza, M. and Banthia, N., A Mechanistic Approach for Predicting the Service Performance of GFRP in Concrete, *Proc. 3rd International Conference on Durability & Field Applications of Fiber Reinforced Polymer Composites for Construction (CDCC)*, Québec City, Québec, Canada, May 2007.
29. Banthia, N. and Khalighi, Y., FRP-Concrete Bond: Influence of Surface Preparation, Resin Type and Rate of Loading, *Proc. Fifth International Conference on Concrete under Severe Conditions, CONSEC07*, Tours, France June 4-6, 2007
30. Soleimani, S.M. and N. Banthia, Impact Resistance of Reinforced Concrete Beams with Sprayed GFRP Strengthening, *Proc. Fifth International Conference on Concrete under Severe Conditions, CONSEC07*, Tours, France June 4-6, 2007
31. Banthia, N., Durability Enhancements in Concrete with Fiber Reinforcement, *Proc. Int. Conf on Sustainable Construction Materials and Technologies*, Coventry, U.K., June 11-June 13, 2007.
32. Soleimani, S., Banthia, N., and Mindess, S., Behavior of Reinforced Concrete Beams under Impact Loading: Some New Findings, 6<sup>th</sup> International Conference, on Fracture Mechanics of Concrete and Concrete Structures, Catania, Italy, June 17-22, 2007.
33. Soleimani, S., Banthia, N., and Mindess, S., Impact Performance of RC Beams Retrofitted with Externally Bonded Sprayed FRPs, *Advances in Construction Materials (Symposium in Honor of Prof. Reinhardt)*, Stuttgart, Germany, July 23-24, 2007.
34. Banthia, N. and Mindess, S., *Keynote Paper*. Bringing Science to an Art: A Decade of Shotcrete Research at the University of British Columbia, *Proc. Shotcrete for Underground Support X*, September 12 – 16, 2006, Engineering Conferences International, New York, pp. 30-45.
35. Bindiganavile, V. and Banthia, N., Fibre Reinforced Shotcrete: The Effect of Spraying Process, *Proc. Shotcrete for Underground Support X*, September 12 – 16, 2006, Engineering Conferences International, New York, pp. 158-175.
36. Banthia, N., Tennyson, R. and Mufti, A., World's First Bridge with Sprayed FRP Strengthening, Revisited After Five Years, *Proc. 3<sup>rd</sup> Int. Conf. on FRP Composites in Civil Engineering, CICE-2006*, Dec. 2006, Miami, Florida, Proc. Published by IIFC (Int. Institute for FRPs in Construction), pp. 653-656.
37. Turmo, H., Banthia, N., Gettu, R. and B. Barragan., Study of the Shear Behaviour of Steel and Polypropylene Fibre Reinforced Concrete Beams, *Proc. 5<sup>th</sup> Asian Symposium on Polymers in Concrete (SERC)*, Chennai, India, September 11-12, 2006.
38. Banthia, N. and Bhargava, A., Do Fibers Reduce the Permeability of Stressed Concrete? *Proc of European Symposium on Service Life and Serviceability of Concrete Structures, ESCS-2006*, Espoo, Finland, June 12-14, 2006, pp. 62-67.

39. Jaeger, L.G., Saltzberg, W., Tadros, G. and Banthia, N., The deterioration of concrete deck slabs in bridges – A Canadian Experience, *Proc. 1<sup>st</sup> Int'l Conf. On Fatigue and Fracture in the Infrastructure Bridges and Structures of the 21<sup>st</sup> Century, IAMBAS06*, Philadelphia, USA, August 2006, pp. 6.
40. Mufti, A.A., Banthia, N.,..., "New CHBCD Design provision for Fiber Reinforced Structures", *Proc. 2<sup>nd</sup> Int'l Congress on Concrete Structures, fib ITALIA*, Naples, June 2006.
41. N. Banthia, Shotcrete for Infrastructure Rehabilitation, *Proc. Int. Conf. on Civil Engineering Infrastructure Systems*, Lebanon, June 12-14, 2006, 15 pp.
42. Tennyson, R.C., Mufti, A., Banthia, N., and Rivera, E., Application of Long Gauge Fiber Optic Sensors to Monitor Bridge Structures, *Proc. 7<sup>th</sup> International Conference on Short & Medium Span Bridges*, Montreal, 2006.
43. Mufti, A., Onofrie, M., Benmokrane, B., Banthia, N., Boulfiza, M., Newhook, J., Bakht, B., Tadros, G., and Brett, P., Durability of GFRP Reinforced Concrete in Field Structures, *Proc. 7<sup>th</sup> Int'l. Symposium on Fiber Reinforced Polymers for Reinforced Concrete Structures, FRPCS-7, SP-230-77*, American Concrete Institute, 2005, pp. 1361-1375.
44. Bindiganavile, V. and Banthia, N., A Study of Size Effects on the Dynamic Response of Plain Concrete, *Proc., 3<sup>rd</sup> Int. Conf. On Construction Materials: Performance, Innovations, and Structural Implications, ConMat'05*, Vancouver, August 22-24, 2005 (CD-Rom)
45. Kumar, A., Boulfiza, M. and Banthia, N., Long Term Performance of Bridge Decks in Chloride-laden Environments: Effect of Cracking on Conventional and Innovative Designs. *Proc., 3<sup>rd</sup> Int. Conf. On Construction Materials: Performance, Innovations, and Structural Implications, ConMat'05*, Vancouver, August 22-24, 2005 (CD-Rom)
46. Banthia, N. and Gupta, R., Influence of Polypropylene Fiber Geometry on Plastic Shrinkage Cracking in Concrete, *Proc., 3<sup>rd</sup> Int. Conf. On Construction Materials: Performance, Innovations, and Structural Implications, ConMat'05*, Vancouver, August 22-24, 2005 (CD-Rom)
47. Hossain, M. Z., Inoue, S., Banthia, N. and Rokonzaman, M., Strength and water permeability of concrete with recycled aggregates. *Proc., 3<sup>rd</sup> Int. Conf. On Construction Materials: Performance, Innovations, and Structural Implications, ConMat'05*, Vancouver, August 22-24, 2005 (CD-Rom)
48. Majdzadeh, E., Soleimani, S.M.N., and Banthia, N., Shear strength of RC beams with a fibrous concrete matrix, *Proc., 3<sup>rd</sup> Int. Conf. On Construction Materials: Performance, Innovations, and Structural Implications, ConMat'05*, Vancouver, August 22-24, 2005 (CD-Rom)
49. Mufti, A., Onofrie, M., Benmokrane, B., Banthia, N., Boulfiza, M., Newhook, J., Bakht, B., Tadros, G., and Brett, P., Studies of Concrete Reinforced with GFRP Specimens From Field Demonstration Structures, *Proc. Composites in Construction, Third Int. Conference (Hamlin, P., Editor)*, Lyon, France, July 2005.
50. Banthia, N., and Maalej, M., Conclusions from TG-F, Special Considerations HPFRCC, *Proc. Int. Workshop on HPFRCC in Structural Applications*, Hawaii, RILEM PROC. 49, pp. 2006, pp. 475-478.
51. Mufti, A., Onofrie, M., Benmokrane, B., Banthia, N., Boulfiza, M., Newhook, J., Bakht, B., Tadros, G., and Brett, P., Studied of Concrete Reinforced with GFRP Specimens from Field Demonstration Projects, *Proc. Int. Workshop on Innovative Bridge Deck Technologies*, ISIS Canada, Winnipeg, 2005, pp. 229-246.
52. Banthia, N., FRC for Bridge Decks, *Proc. Int. Workshop on Innovative Bridge Deck Technologies*, ISIS Canada, Winnipeg, 2005, pp. 195-214.
53. Banthia, N., Impact Resistance of HPFRCC, *Proc. Int. Workshop on HPFRCC in Structural Applications, Hawaii*, RILEM PROC. 49, pp. 2006, pp. 479-488.
54. Banthia, N., Gupta R., and Mindess, S., Developing crack resistant FRC overlay materials for repair applications, NSF Workshop, Bergamo, Italy, 2004, Eds. Ahmed et al, Starrylink Editrice, Italy, 2004 pp. 99-106.
55. Banthia, N., Keynote Paper, Impact and Blast Protection with Fiber Reinforced Concrete, *Proc. BEFIB*, Verenna, Italy, RILEM Proc. 39, 2004, pp. 31-44.

56. Banthia, N., FRPs for Strengthening and Blast Resistant Design, Keynote Paper, *Proc. Int. Conf. on Advances in Composite Materials, Varanasi, India, December 17-19, 2004*, pp. 1-15.
57. Banthia, N., Fiber Reinforced Polymers in Strengthening and Blast Resistant Design, *Proc. Fourth International Conference on Concrete under Severe Conditions, CONSEC04, Seoul, South Korea, 2004*, pp. 56-73.
58. Banthia, N. and Bindiganavile, V., Crack Growth Resistance of Fiber Reinforced Concrete at High Strain-Rates, Proceedings: George C. Hoff Symposium on High-Performance Concrete & Concrete for Marine Environment, (Ed. T. C. Liu), Las Vegas, U.S.A., May 25, 2004, pp. 123-138.
59. Banthia, N., Advanced Repair Technologies, *Proc. IARMS-3, Singapore, December 2003*.
60. Mindess, S., Xu, H. and Banthia, N., Toughness of High Strength Polymer Modified Fiber Reinforced Concrete: Beam Tests vs. Plate Tests, *Proc. International Conference on Advances in Concrete Through Science and Engineering, Evanston, RILEM (CD ROM), 2004*.
61. Banthia, N., Biparva, A., Woo, D. and Reimer, J., Field Performance and Internet-Based Monitoring of an FRC Overlay, *Proc. International Conference on Advances in Concrete Through Science and Engineering, Evanston, RILEM (CD ROM), 2004*.
62. Mindess, S., Banthia, N., and Xu, H., Fiber Reinforced Round Panels Subjected to Impact Loading, *RILEM Proc.#36 (Spring Meeting) Advances in Concrete through Science & Engineering, Evanston, IL Mar 21-26, 2004*, pp.165-174.
63. Banthia, N. and Bindiganavile, V., 'Process Dependence of Fiber Reinforced Shotcrete', *RILEM Proc. #36 (Spring Meeting) Advances in Concrete through Science & Engineering, Evanston, IL, Mar 21-26, 2004*, pp. 31-42.
64. Sorelli, L., N. Banthia, Bindiganavile, V. and Plizzari, G., 'Static and dynamic responses of hybrid fiber reinforced concrete', *Proc. International Conference ICACS 2003, Xuzhou, China, (Eds. Y-S Yuan, S.P. Shah & H-L Lü, 17-19 Sept. 2003, Vol. 2, paper #122*.
65. Boulfiza, M., Banthia, N., Effects of Cracking on chlorides penetration in concrete: Smearred versus Discrete representation of Cracks. *Advances in Cement and Concrete IX: Volume Changes, Cracking, and Durability, Copper Mountain, Colorado, August 10-14, 2003*.
66. Banthia, N., Bindiganavile, V. and Mindess, S., Impact and Blast Resistance of Fiber Reinforced Concrete: A Progress Report, (Invited Lead Paper), *Proc. HPFRCC-3, RILEM, Proc. #30, Paris, June 2003*, pp. 117-132.
67. Bindiganavile, V. and Banthia, N., Crack Growth Resistance of Fiber Reinforced Concrete under Drop-Weight Impact Loading, American Concrete Institute, *Special Publication: Fiber Reinforced Concrete Innovations for Value, SP-216, 2003*, pp. 203-220.
68. Banthia, N., Cangiano, S., Cucitore, R., Plizzari, G.A., Sorelli, L., 'Hybrid Fiber Reinforced Concrete under Fatigue Loading, International Conference on Fatigue Crack Paths (FCP 2003) Parma, Italy, 2003.
69. Meda, A., Plizzari, G.A., Sorelli, L. and Banthia, N., 'Uniaxial and bending tests on hybrid fiber reinforced concrete', *International Symposium Celebrating Concrete: People and Practice, Dundee, UK, September 2003*.
70. Sorelli, L., Banthia, N. and Plizzari, G., "Crack Growth Resistance of Hybrid Fiber Reinforced Medium, High and Ultra High Strength Cement Composites", *Proc. ACI-Spring Convention 'Thin Precast Product'; SP-ACI 2003*, pp. 161-177.
71. Boulfiza, M. and Banthia, N., Effect of Crack Growth on the Overall Mechanical Properties of Cement Composites, *Proc. ACI-Spring Convention 'Thin Precast Product'; SP-224, ACI 2004*, pp. 193-208.
72. Sorelli, L., Banthia, N., Plizzari, G. and Bindiganavile, V., 'Static and Dynamic Responses of Hybrid Fiber Reinforced Concrete', *ICACS, China, 2004*.
73. Boulfiza, M., Banthia, N. A Discrete Crack Analysis for High Fiber Volume Fraction Cement-Based Composites: Part 1, Constitutive Modeling, in *Damage & Fracture Mechanics VII, (Eds. Brebbia and Nishida), WIT Press, UK, 2002, 435-443*.
74. Boulfiza, M., Banthia, N. A Discrete Crack Analysis for High Fiber Volume Fraction Cement-Based Composites: Part 2, Numerical Implementation, in *Damage & Fracture Mechanics VII, (Eds. Brebbia and Nishida), WIT Press, UK, 2002, 445-454*.

75. Turmo, J., N. Banthia, R. Gettu and B. Barragán, "Estudio del comportamiento a cortante de vigas de hormigón reforzado con fibras", Comunicaciones II Congreso ACHE, 2002, Puentes y Estructuras de Edificación, Asociación Científica-Técnica de Hormigón Estructural, Madrid, pp. 539-548 (2002).
76. Turmo, J., Banthia, N., Gettu, R., and Barragán, B., Estudio del comportamiento a cortante de vigas de hormigón reforzado con fibras, *Proc.*, II CONGRESO ACHE DE PUENTES Y ESTRUCTURAS, Madrid, 2002, (in Spanish).
77. Banthia, N., Monitoring World's First Bridge with Sprayed Fiber Reinforced Polymer Repair, *Proc. 1st Int. Conf. on Structural Health Monitoring*, Winnipeg, ISIS Canada Corporation, September 2002, pp. 135-144.
78. Gupta, R. Soleimani, S.M and Banthia, N., Hybrid Fiber Reinforced Concrete for Bridges, in *Proc. 6th International Conference on Short and Medium Span Bridges*, Brett, P., (Eds. Banthia, N. and Buckland, P.), Canadian Society for Civil Engineering, SMSB-VI, Vancouver, August 2002, pp. 297-304.
79. Mirsavah and Banthia, N., Performance of Steel Fiber Reinforced Concrete (SFRC) Under Shear Load as an Advanced Material in Bridge Construction and Design, in *Proc. 6th International Conference on Short and Medium Span Bridges*, (Eds. Brett, P., Banthia, N. and Buckland, P.), Canadian Society for Civil Engineering, SMSB- VI, Vancouver, August 2002. pp. 321-328.
80. Sorelli, L., Plizzari, G. and Banthia, N., Constitutive Modeling of Fiber Reinforced Concrete, in *Proc. 6th International Conference on Short and Medium Span Bridges*, (Eds. Brett, P., Banthia, N. and Buckland, P.), Canadian Society for Civil Engineering, SMSB- VI, Vancouver, August 2002. pp. 347-354.
81. Banthia, N. and Nandakumar, N., Strengthening of Safe Bridge, BC, Using Sprayed Fiber Reinforced Polymers, in *Proc. 6th International Conference on Short and Medium Span Bridges*, (Eds. Brett, P., Banthia, N. and Buckland, P.), Canadian Society for Civil Engineering, SMSB- VI, Vancouver, August 2002. pp. 337-346.
82. Sorelli, L., Banthia, N., Plizzari, G. and Bindiganavile, V., 'Comportamento Flessionale in Fase Fessurata di HyFRC da Prove di Pull-out sulla Singola Fibra', *Proc. 'Convegno IGF'*, June, Catania, 2002, pp. 385-394.
83. Banthia, N., Sprayed Fiber Reinforced Plastics for Repair and Strengthening, *Proc. SAMPE 2002*, Long Beach California, May 2002,
84. Banthia, N. and Bindiganavile, N., Fiber Reinforced Cement Based Composites Under Drop Weight Impact Loading: Test Equipment & Material Influences, *Proc.*, *Tribute to SP Shah Symposium*, American Concrete Institute, SP-206, Detroit, April 2002. pp. 411-428.
85. Mufti, A., Memon, A.H., Bakth, B. and Banthia, N., Fatigue Investigation of the Steel Free Bridge Deck Slabs, *Proc.*, *Tribute to SP Shah Symposium*, American Concrete Institute, SP-206, Detroit, April 2002. pp. 61-70.
86. Bindiganavile, V. and Banthia, N., Machine Effects in the Drop Weight Impact Testing of Plain Concrete Beams, in *Concrete Under Severe Conditions*, *Proc.*, *3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, Banthia, N., Sakai, K. and GjØrv, O.E. (Eds.) Vancouver, June 2001, The University of BC, 2001, pp. 589-596.
87. Boulfiza, M., Sakai, K., Yoshida, H., and Banthia, N., Performance Evaluation of Sound and Cracked Concrete, Part I: Moisture Movement, in *Concrete Under Severe Conditions*, *Proc.*, *3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, (Eds. Banthia, N., Sakai, K. and GjØrv, O.E.) Vancouver, June 2001, The University of BC, 2001, pp. 143-150.
88. Boulfiza, M., Sakai, K., Yoshida, H., and Banthia, N., Performance Evaluation of Sound and Cracked Concrete, Part II: Chloride Ingress, in *Concrete Under Severe Conditions*, *Proc.*, *3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, (Eds. Banthia, N., Sakai, K. and GjØrv, O.E.) Vancouver, June 2001, The University of BC, 2001, pp. 135-1142.
89. Sukontasukkul, P., Mindess, S., Banthia, N. and Mikami, T., Fracture of Laterally Confined Fiber Reinforced Concrete under Impact Loading, in *Concrete Under Severe Conditions*, *Proc.*, *3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, (Eds. Banthia, N., Sakai, K. and GjØrv, O.E.) Vancouver, June 2001, The University of BC, 2001, pp. 747-753.

90. Mufti, A., Banthia, N. and Bakht, B., Fatigue Testing of Precast Arch Panels, in Concrete Under Severe Conditions, *Proc., 3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, (Eds. Banthia, N., Sakai, K. and GjØrv, O.E.) Vancouver, June 2001, The University of BC, 2001, pp. 1032-1041.
91. Banthia, N. and Nandakumar, N., Carbon Fiber Reinforced Concrete in Parking Garage Repair, in Concrete Under Severe Conditions, *Proc., 3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, (Eds. Banthia, N., Sakai, K. and GjØrv, O.E.) Vancouver, June 2001, The University of BC, 2001, pp. 1748-1760.
92. Boyd, N., Banthia, N., Strengthening of Full-Scale Channel Beams with Sprayed FRPs, *Proc. 9th Int. Conf. on Structural Faults and Repairs*, London, July 4-6, 2001.
93. Banthia, N. and Bindiganavile, V., Machine Effects in the Drop Weight Impact Testing of Plain Concrete Beams, in Concrete Under Severe Conditions, *Proc., 3rd International Conference on Concrete Under Severe Conditions of Environment and Loading*, (Eds. Banthia, N., Sakai, K. and GjØrv, O.E.) Vancouver, June 2001, The University of BC, 2001, pp. 589-596.
94. Banthia, N., 'Fracture Toughness of Fiber Reinforced Shotcrete: Issues and Challenges', *Proc. International Conference on Engineering Developments in Shotcrete*, Hobart, Tasmania, April 2-5, 2001 pp 3-6.
95. Banthia, N. and Armelin, H.S., A Double Anchored (DD) Steel Fiber for Shotcrete, *Proc. International Conference on Engineering Developments in Shotcrete*, Hobart, Tasmania, April 2-5, 2001, pp. 41-46.
96. Banthia, N., Boyd, A.J., Johnston, M.M., Ross, S., and Sexsmith, R.J., Sprayed Fiber Reinforced Polymers for Infrastructure Restoration, *Proc. 2nd International Conference on Engineering Materials*, San Jose, August 2001, pp 213-221.
97. Banthia, N., Nandakumar, N., Subjectivity in Toughness Characterization of Fiber Reinforced Concrete, *Proc. 2nd International Conference on Engineering Materials*, San Jose, August 2001, pp 755-765.
98. Banthia, N. and Bindiganavile, V., Polymer And Steel Fiber Reinforced Concrete Under Impact Loading, *Proc. International Symposium on High Performance Concrete, HPC 2000*, Hong Kong, December 2000, pp 365-372.
99. Banthia, N., Crack Growth Resistance of High Performance Hybrid Fiber Reinforced Cement Composites, *Proc. International Symposium on High Performance Concrete, HPC 2000*, Hong Kong, December 2000, pp. 403-410.
100. Banthia, N., and Bindiganavile, V., Use of Mineral Admixtures for Rebound Reduction in Shotcrete, *Proc. 7th CANMET/ACI International Conf. On Fly-Ash, Silica Fume, Slag, and Natural Pozzolans in Concrete*, Madras, India, ACI SP-199, 2001, pp. 931-950.
101. Boulfiza, M., Sakai, K., Banthia, N., A general framework for an integrated structural durability design procedure. *Proc. of the RILEM/CIB/ISO International Symposium, Integrated Life-Cycle design of Materials and Structures ILCDES 2000*, (Ed. A. Sarja), Helsinki/Finland, May 2000, pp. 22-25.
102. Sukontasukkul, P., Mindess, S., and Banthia, N., Fracture of Fiber Reinforced Concrete Notched Beams under Impact Loading, *Proc. Fifth RILEM International Symposium on Fiber Reinforced Concrete (BEFIB2000)*, Lyon, France, 2000, pp 531-540.
103. Banthia, N., Bindiganavile, V. and Yan, C., Development and Application of High Performance Hybrid Fiber Reinforced Concrete, *Proc. Fifth RILEM International Symposium on Fiber Reinforced Concrete (BEFIB2000)*, Lyon, France, 2000, pp 471-480.
104. Bindiganavile, V. and Banthia, N., Rebound Reduction in Dry-mix Shotcrete through Matrix Modifications, *Proc. Fifth RILEM International Symposium on Fiber Reinforced Concrete (BEFIB2000)*, Lyon, France, 2000, pp 149-150.
105. Campione, G., Mindess, S., and Banthia, N., Monotonic and Cyclic Flexural Behavior of Medium and High Strength Fiber Reinforced Concrete, *Proc. Fifth RILEM International Symposium on Fiber Reinforced Concrete (BEFIB2000)*, Lyon, France, 2000, pp 461-470.
106. Banthia, N., and Genois, I., Controlled Crack Growth Tests for Optimization of Micro-Fiber Reinforced Cement Composites, American Concrete Institute, *Special Publication: Application and Testing of Fracture Mechanics Concepts* (Ed. C. Vipulanandan), SP-201, 2000, pp. 55-74.
107. Sukontasukkul, P., Mindess, S., Lam, F., and Banthia, N., Impact Behavior of Parallel Strand Lumber (PSL), *Proc. World Conference on Timber Engineering*, Whistler, BC, July 2000.

108. Banthia, N., Sprayed Fiber Reinforced Plastics for Repair and Strengthening, *Proc. 2nd International Conference on Composites in Transportation Industry, ACUN-2*, Feb. 2000 (Eds. Bandyopadhyay, et al), pp. 121-129.
109. Boyd, A.J., and Banthia, N., Shear Strengthening of Reinforced Concrete Beams with Sprayed Glass Fiber Reinforced Plastics, *Proc. 8th Int. Conf. Structural Faults and Repairs*, London, England, July 1999.
110. Banthia, N., Fiber Reinforced Shotcrete: Challenges, *Proc. of Int. Workshop on High Performance Fiber Reinforced Cement-Based Composites (HPFRCC-3)*, (Eds. Reinhardt and Naaman), Mainz, May 16-19, 1999, RILEM Publications-6, pp. 161-170.
111. Banthia, N., Shotcrete: Is it Just another Concrete? *Proc. Int. Conf. on Infrastructure Regeneration and Rehabilitation*, Sheffield, June 28-July 2, 1999.
112. Sukontasukkul, P., Mindess, S., and Banthia, N., Impact Behavior of Steel Fiber Reinforced Concrete Plates, *Proc. Symposium on Natural and Hybrid Composite Materials in Civil Engineering: International Conference on Composites Engineering (ICCE6)*, Orlando, USA, 1999, pp. 809-810.
113. Banthia, N., Yan, C., Mufti, A., and Bakht, B., CFRC Permanent Formwork for the Steel Free Bridge Deck, in High Performance Fiber Reinforced Thin Sheet Products, (Eds. Peled, Shah and Banthia) ACI, Special Technical Publication, SP-190, American Concrete Institute, Detroit, USA, pp. 21-39.
114. Dubey, A. and Banthia, N., "High-Performance Fiber Reinforced Concrete: Optimizing Interfacial Properties for High-Modulus and Low-Modulus Fibers," to appear in *Special Publication* from ACI Spring Convention, Chicago, March 1999.
115. Banthia, N. and Yan, C., High Performance Micro-Fiber Reinforced Concrete for Thin Repairs, ACI Special Publication on High Performance Materials for Repairs (Eds. Krstulovic-Opara et al), ACI SP-185, pp. 69-80.
116. Gupta, P., Banthia, N. and Yan, C., Impact Behavior of Fiber Reinforced Wet-Mix Shotcrete, *Proc. of Int. Conf. on Concrete under Severe Conditions: Environment and Loading (CONSEC '98)*, Tromso, Norway, E and FN SPON, 1998, pp. 1045-1054.
117. Dubey, A. and Banthia, N., Influence of Sub-Zero Temperature on Fracture Prop. of Plain and Synthetic FRC, *Proc. Int. Conf. on Concrete under Severe Conditions: Environment and Loading (CONSEC '98)*, Tromso, Norway, E and FN SPON, 1998, pp. 1798-1808.
118. Boulfiza, M. and Banthia, N., Numerical and Experimental Assessment of CFRC as Repair Material, *Proc. Int. Conf. on Concrete under Severe Conditions: Environment and Loading (CONSEC '98)*, Tromso, Norway, E and FN SPON 1998, pp. 949-958.
119. Chan, C., Banthia, N. and Sakai, K., Use of Recycled Aggregate in Shotcrete, *Proc. Int. Workshop on Concrete Technology for a Sustainable Development in the 21st Century* (Eds. Gjorv and Sakai), E and FN SPON, 2000, pp. 309-320.
120. Banthia, N. and Campbell, K., Restrained Shrinkage Cracking in Bonded Fiber Reinforced Shotcrete, RILEM- *Proc. 35, The Interfacial Transition Zone in Cementitious Composites*, (Eds. Katz, Bentur, Alexander and Arligui), E and F N. Spon, 1998, pp. 216-223.
121. Banthia, N., Fiber Reinforced Concrete: Present and the Future (invited keynote address), Asia-Pacific Specialty Conference on Fiber Reinforced Concrete, 1997, Singapore, pp. 1-10. Paper says Montreal 1998 CSCE
122. Dubey, A. and Banthia, N. Choosing an Appropriate Plan for High Performance Fiber Reinforced Concrete, *Proc. Asia-Pacific Specialty Conference on Fiber Reinforced Concrete*, 1997, Singapore, pp. 49-54.
123. Banthia, N., Dubey, A. and Bell, L., The True Stress-Transfer Capability of Polymeric Fibers Across a Crack: Quest for a Stable Test, *Proc. Asia-Pacific Specialty Conference on Fiber Reinforced Concrete*, 1997, Singapore, pp. 30-39.
124. Banthia, N. and Armelin, H.S. Understanding Rebound in Fiber-Reinforced Dry-Mix Shotcrete, *Proc. 5th International Conference on Structural Failure, Durability and Retrofit*, 1997, Singapore, pp. 471-481.
125. Banthia, N., Yan, C. and Lee, W. Y., Restrained Shrinkage Cracking in Fiber Reinforced Concrete with Polyolefin Fiber, *Proc. Fifth International Conference on Structural Failure, Durability and Retrofit*, 1997, Singapore, pp. 456-470.
126. Boulfiza, M., Sakai, K., Pigeon, M., Modélisation micro-mécanique du comportement des composites cimentaires renforcés de fibres. *Proc. 2ème Colloque International Francophone sur les bétons de Fibres Métalliques*, Toulouse/France, 1996.

127. Banthia, N., Yan, C. and Nandakumar, N., Sprayed FRPs for Repair of Concrete Structures, *Proc., 2nd Int. Conf. on Adv. Comp. Materials, ACMBS II*, Montreal, August 1996, pp. 537-546.
128. Banthia, N., Yan, C. and Sakai, K., Concrete Plates with FRP Reinforcement Under Impact, *Proc., 2nd Int. Conf. on Adv. Comp. Materials, ACMBS II*, Montreal, August 1996, pp. 707-718.
129. Pleau, R., Azzabi, M., Pigeon, M. and Banthia, N., Frost Durability and De-icer Salt Scaling Resistance of High-Performance Cement Pastes Reinforced with Steel and Carbon Micro-Fibres, *Proc. Conf. Concrete in the Service of Mankind*, Scotland, June 1996.
130. Banthia, N. and Genois, I., Pitch-Based Carbon Fiber Reinforced Cement Composites: A Review, ACI SP-154, 1995, American Concrete Institute, Detroit, pp. 315-334.
131. Banthia, N., Moncef, A. and Sheng, J., Uniaxial Tensile Response of Cement Composites Reinforced with High Volume Fractions of Steel, Carbon and Polypropylene Micro-Fibers, in *Thin Reinforced Concrete Products and Systems*, ACI SP-146, 1994, P.N. (Ed. Balaguru), pp. 43-68.
132. Banthia, N. Yan, N., Chan, C., Yan, C. and Bentur, A., Bond-Slip Mechanisms in Steel Micro-Fiber Reinforced Cement Composites, *MRS Proc.*, Vol. 370, pp. 539-543, 1995.
133. Banthia, N., Azzabi, M. and Pigeon, M., Restrained Shrinkage Tests on Fiber Reinforced Cement Composites, ACI SP on Testing Fiber Reinforced Concrete (Eds. Stevens, Banthia, Gopalaratnam, and Tatnall), SP155, 1995, pp. 137-152.
134. Banthia, N., Chokri, K. and Trottier, J-F., Impact Tests on Fiber Reinforced Cement Composites, ACI SP on Testing Fiber Reinforced Concrete, (Eds. Stevens, Banthia, Gopalaratnam, and Tatnall), SP155, 1995, pp.171-188.
135. Banthia, N. and Mani, M., Behaviour of Beams with Non-Prestressed GFRP Reinforcement and a Fibrous Concrete Matrix, Proc. of R.N. Swamy Symposium, "Real World Concrete", *Proc. 5th CANMET/ACI Int. Conference on Fly Ash, Silica Fume, Slag and Natural Pozzolans in Concrete*, Milwaukee, June 1995, pp. 71-94.
136. Banthia, N., Qu, L. and Sakai, K., Strength and Toughness of Fiber Reinforced Concrete at Low Temperatures, *Proc. Int. Conf. on Concrete Under Severe Conditions*, (Sakai et al. Eds.), E&FN SPON, Sapporo, August 1995, pp. 1428-1437.
137. Banthia, N., Trottier, J-F. and Mindess, S., Fracture of Fiber Reinforced Concrete Under Impact, *Proc. of Int. Conf. on Concrete Under Severe Conditions*, (Sakai et al. Eds.), E&FN SPON, Sapporo, August 1995, pp. 1664-1674.
138. Banthia, N., Carbon Fiber Reinforced Cements in FRC: Dev. and Innovation, ACI SP-142, 1994, pp. 91-120.
139. Mindess, S. and Banthia, N., Fiber Reinforced Cementitious Composites: Current Practice and Future Prospects, in *Concrete Technology: Past, Present and Future*, ACI SP 144, 1994, pp. 417-446.
140. Banthia, N. Sheng, J. and Pigeon, M., Strengthening and Toughening Mechanisms in Carbon Fiber Reinforced Cements, *Proc. 9th Int. Cong. on the Chemistry of Cements*, New Delhi, Vol. IV, Nov. 1992, pp. 492-498.
141. Krishnadev, M.R., Berrada, S., N. Banthia and Trottier, J.-F., Deformed Steel Fiber Pull-Out Mechanics: Influence of Steel Properties, *Proc. RILEM 4th Int. Conf. on Fiber Reinf. Cement and Concrete*, Sheffield (UK), Sept. 1992, pp. 390-399.
142. Banthia, N., Trottier, J.-F., Wood, D. and Beaupré, D., Steel Fiber Dry-Mix Shotcrete: Influence of Fiber Geometry, *Proc. RILEM 4th Int. Conf. on Fiber Reinforced Cement and Concrete*, Sheffield (UK), Sept. 1992, pp. 277-296.
143. Banthia, N. and Trottier, J.F., Discussion: Fiber-Type Effects on the Performance of Steel Fiber Reinforced Concrete, *ACI. Mat. J.*, 89(1), 1992, pp. 106-107.
144. Krishnadev, M.R., Wang, G.L., Berrada, S. and Banthia, N., Influence of Cleanliness, Chemistry and Processing on the Charpy Impact Energy and Dynamic Fracture Toughness of A633 and A710 HSLA Steels, *Proc. 32nd Mechanical Working and Steel Processing Conf.*, The Iron and Steel Soc., Vol. XXVIII, 1992, pp. 517-525.
145. Banthia, N. and Dubeau S., Micro-Reinforced Cementitious Composites for Thin Repairs, *Proc. ACI Int. Conf. on Evaluation and Rehab. of Concr. Struct. and Innovation in Design*, Hong Kong, Dec. 1991, Vol. I, pp. 307-322.

146. Mallikarjuna, M., Banthia, N. and Fafard, M., On Modeling Static Pull-Out of Deformed Steel Fibers, *Proc. The 3rd Int. Symp. on Brittle Matrix Composites (BMC-3)*, Poland, September 1991, pp. 174-183.
147. Banthia, N., Sheng, J., Mindess, S. and Ohama, Y., Toughness Characterization of Carbon Fiber Reinforced Cements, *ibid*, Poland, September 1991, pp. 318-327.
148. Mallikarjuna, M., Banthia, N. and Mindess, S., Fiber Reinforced Concrete as a Material for Nuclear Reactor Containment Buildings, *Trans., Proc. 11th Int. Conf. on Struct. Mech. in Reactor Tech. (SMiRT)*, Aug. 18-23, 1991, Tokyo, Japan.
149. Banthia, N., and Sheng, J., Durability of Carbon Fiber Reinforced Cements in Acidic Environments, *Proc., CANMET/ACI 2nd Int. Conf. on Durability of Concrete*, Montreal, August 1991, pp. 837-850.
150. Banthia, N., Mallikarjuna, M. and Fafard, M., Modeling Pull-Out of Deformed Steel Fibers Bonded in Cementitious Matrices, *Int. Conf. on Fracture Processes in Brittle Disordered Materials*, Netherlands, June 1991, pp. 327-336.
151. Banthia, N., Trottier, J.-F., Pigeon, M. and Krishnadev, M.R. Deformed Steel Fiber Pull-Out: Material Characteristics and Metallurgical Processes, *Proc. Int. Work. on Fiber Reinforced Concrete.*, Mainz, Germany, June 1991, pp. 456-466.
152. Banthia, N., Carbon Fiber Cement Composites: A New Impetus, *Proc. Sixth Canadian Construction Congress*, Toronto, December 5-7, 1990, pp. 70-82.
153. Banthia, N. and Sheng, J., Micro-Reinforced Cementitious Materials, *Materials Research Soc. Proc.*, Vol. 211 (Eds. S. Mindess and J. Skalny), Nov. 1990, pp. 25-32.
154. Banthia, N., Sheng, J. and Ohama, Y., Carbon Fiber Reinforced Cement Plates Under Transverse Loading, *Proc. 5th Tech. Conf. on Composite Materials (Amer. Soc. for Composites)*, Michigan, June 1990, pp. 709-718.
155. Banthia, N. and Trottier, J.-F., Strain-Rate Sensitivity of Fiber-Matrix Bond, *Proc., Conf. on Advances in Cementitious Materials* (Ed. S. Mindess), American Ceramic Soc., Gaithersburg USA, July, 1990, pp. 603-618.
156. Banthia, N., Micromechanics of Steel Fiber - Cementitious Matrix Bond, *Proc. Int. Conf. on Micromechanics of Failure of Quasi-Brittle Materials (Soc. for Experimental Mech.)*, Albuquerque, USA, June, 1990, pp. 254-264.
157. Banthia, N. and Ohama, Y., Dynamic Tensile Fracture of Carbon Fiber Reinforced Cements, *Proc. Int. Conf. on Fiber Reinforced Cements*, Cardiff, England, 1989, pp. 251-260.
158. Banthia, N., Trottier, J.-F. and Pigeon, M., Fiber Pull-Out Mechanisms: Effects of Fiber Geometry, Loading Rate and Sub-Zero Temperatures, *ibid*, pp. 136-145.
159. Banthia, N. and Sicard, V., Effect of Curing Temperature on the Complete Stress-Strain Plots for High Strength Concrete, *Proc. Int. Conf. on Recent Develop in Fracture of Concrete & Rock*, Cardiff, England, Sept. 1989, pp. 587-595.
160. Banthia, N. and Pigeon, M., Dynamic Behavior of Concrete and its Fiber Reinforced Composites, *Proc. Int. Conf. on Structures under Shock and Impact Loading*, Cambridge, USA, July, 1989, pp. 124-136.
161. Banthia, N. and Mindess, S., Permeability Measurements on Cement Paste, *Proc., Materials Research Soc. Symp. Vol. 137*, 1989, pp. 173-178.
162. Banthia, N., Mindess, S. and Bentur, A., Energy Balance in Instrumented Impact Tests on Plain Concrete Beams, *Proc. SEM-RILEM Int. Conf. on Fracture of Concrete and Rock*, Houston, June 1987, pp. 22-34.
163. Bentur, A., Mindess, S. and Banthia, N., The Behavior of Reinforced Concrete under Impact: The Effect of Concrete Strength, *ibid*, June 1987, pp. 449-458.
164. Banthia, N., Mindess, S. and Bentur, A., Effect of Impact Loading on the Properties of Concrete, *Proc. RILEM's 1st Int. Conf. "From Materials Sciences to Materials Eng."* - Paris, 1987, pp. 1033-1040.
165. Banthia, N., Mindess, S., Bentur, A., Behaviour of Fiber Reinforced Concrete Beams Under Impact Loading, *Proc. 6th Int. Conf. on Fracture of Concrete and Rock*, 10 pages, London, 1987.

166. Bentur, A., Mindess, S. and Banthia, N., The Fracture of Fiber Reinforced Concrete under Impact Loading, *Proc. #64, Materials Research Society*, Pittsburgh, USA, 1986, pp. 225-234.
167. Mindess, S., Banthia, N., Ritter, A., and Skalny, J., Crack Development in Cementitious Materials under Impact Loading, *Proc. #64, Materials Research Society*, Pittsburgh, USA, 1986, pp. 217-224.

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#### 6. Chapters in Books:

1. N. Banthia and Talukdar, S., Chapter 9: Non Destructive Testing of Structures, in *Monitoring Technologies for Bridge Management*, (Edited by Baidar Bakht, Aftab Mufti and Leon Wegner), Published by Multi-Science Co., UK., Dec 2010.
2. N. Banthia, Sprayed Concrete, Chapter 4 in *Developments in the Formulations and Reinforcement of Concrete*, Ed. S. Mindess, Woodhead Publishing in Materials, Cambridge, England, 2008, pp. 98-111.
3. N. Banthia, F. Azhari, S. Talukdar and Y. Khalighi, Chapter 4: Durability of FRP Bond with Concrete, Steel & Wood in *Research Monograph: Durability of Fiber Reinforced Polymers in Civil Infrastructure*, Published by Canadian Network of Centers of Excellence on Intelligent Sensing for Innovative Structures (NCE-ISIS), Eds: Nemkumar Banthia, Brahim Benmokrane and Vistasp Kharbhari, 2007, 43 pp.
4. A. Mufti, M. Boulfiza, N. Banthia, B. Benmokrane and M. Onofrei, Chapter 6. GFRP Performance in Bridge Decks in *Research Monograph: Durability of Fiber Reinforced Polymers in Civil Infrastructure*, Published by Canadian Network of Centers of Excellence on Intelligent Sensing for Innovative Structures (NCE-ISIS), Eds: Nemkumar Banthia, Brahim Benmokrane and Vistasp Kharbhari, 2007, 23 pp.
5. Banthia, N., Fiber Reinforced Concrete: State of the Art, in *Cement and Concrete Science and Technology* (Ed. Ghosh), ABI Books Pvt. Ltd. New Delhi, 1991, Chapter 11, pp. 288-320.

#### 7. Non-Refereed Contributions (Only a Few Listed):

1. Banthia, N., Fiber Reinforced Concrete, *Proc., 2<sup>nd</sup> International Symp. Concrete Technology for Sustainable Development with Emphasis on Infrastructure*, Hyderabad, India, Feb-27-March 3, 2005, pp. 333-349.
2. Banthia, N., Shotcrete, *Proc. 2<sup>nd</sup> International Symp. Concrete Technology for Sustainable Development with Emphasis on Infrastructure*, Hyderabad, India, Feb-27-March 3, 2005, pp. 583-596.
3. Bindiganavile, V. and Banthia, N., Impact Response of the Fiber-Matrix Bond in Concrete, *Fibre Reinforced Materials, 3<sup>rd</sup> Asia-Pacific Specialty Conference*, November 2003, Hunan, China.
4. Bindiganavile, V. and Banthia, N., Scaling of Impact Loaded Plain Concrete Beams, Shock & Impact Loads on Structures, *5<sup>th</sup> Asia-Pacific Conference*, November 2003, Hunan, China.
5. Banthia, N. and Mindess, S., Impact Testing of Concrete: Available Testing and Preliminary Findings, *CSCE Proc. Hamilton*, 1990, pp. II-628-649.
6. Banthia, N. and Batchelor, B. deV., Chapter 3: Material Properties of Fiber Reinforced Concrete, *State-of-the-Art Report: Composites in Bridge Constr.* (Eds. Mufti, Erki and Jaeger), *Can. Soc. of Civil Engrs.*, 1991, pp. 70-112.
7. Banthia, N., et al., Steel Fibre Reinforced Concrete Under Impact, *Proc. Int. Symp. on FRC*, Madras, India, 1987, pp. 4.29-4.39.
8. Banthia, N. Micro-Fiber Reinforced Cement Composites: Research and Applications *CSCE Proc.*; Quebec, 1992, Vol. III, pp. 31-43.
9. Banthia, N., Sheng, J. and Mindess, S., Carbon-Cement Composites, *Proc., 4th Int. Conf. on Concrete for Developing Countries*, (CSCE), Jamaica, Feb. 1992, pp. 1-14.
10. Banthia, N. et al., Steel Fiber Reinforced Shotcrete: Influence of Fiber Geometry, *Proc., 3rd Canadian Symp. on Concrete*, Ottawa, August 1993, pp. 30-41.
11. Staneva, P., Sakai, K., Horiguchi, T. and Banthia, N., Flexural Behaviour of SFRC at Low Temperatures, P., *Japan Concrete Institute, Annual Convention*, February 1993.

12. Banthia, N. et al., Restrained Shrinkage Cracking in FRC, *Proc., 5th Int. Coll. on Concrete in Developing Countries*, Egypt, January 1994, pp. 1131-1141.
13. Banthia, N. et al., Rebound and Toughness Characterization of Dry and Wet-Mix Shotcrete, *Proc., 5th Int. Coll. on Concrete in Developing Countries*, Egypt, January 1994, pp. 1155-1167.
14. Dubey, A. and Banthia, N., "Flexural Toughness of High-Performance Steel Fiber Reinforced Concrete (SFRC): Influence of Pozzolans," *Proc. International Conference on Composite Engineering (ICCE/4)*, Hawaii, Jul 1997.
15. Dubey, A. and Banthia, N., "R-Curve Behavior of Polymeric Fiber Reinforced Concretes," *Proc. International Conference on Fiber Reinforced Concrete (ICFRC)*, Guangzhou, China, Nov 1997.
16. Dubey, A. and Banthia, N., "Fracture Properties of High Performance Concrete Reinforced with Synthetic Fibers," *Proc. International Conference of Composite Engineering (ICCE/3)*, New Orleans, Jul 1996.
17. Banthia, N., and Bindiganavile, V., Progress Report: Strain-rate Effects in Concrete, *Proc. NSERC-NSF Joint Conference*, Vancouver, Jan. 3-6, 2000.
18. Banthia, N. and Bindiganavile, V., Keynote Paper, 'Conceptual Modeling and Experimental Investigation of Cement-based Composites under Impact Loading, *Proc. International Conference on Civil Engineering, ICCE-2001*, Bangalore, India, 23-25 July 2001.
19. Banthia, N., Sprayed Composites: A New Dimension in Structural Rehab, *Proc. CANMET/ACI, Second International Seminar on Developments in Repair Materials, Techniques and Maintenance Strategies for Infrastructure and Buildings*, Toronto, April 29-30, 2002.
20. Sukontasukkul, P., Mindess, S., and Banthia, N., "Penetration Resistance of Hybrid Fibre Reinforced Concrete under Low Velocity Impact Loading, Annual Conference of the Canadian Society for Civil Engineering, Montreal, Quebec, Canada, June 2002.
21. Bindiganavile, V., Banthia, N. and Aarup, B., Impact Resistance of an Ultra High Strength Fiber Reinforced Cement Composites, *Proc. CSCE, Annual Conference*, Montreal, June 5-8, 2002 Canadian Society for Civil Engineering.
22. Banthia, N., Sprayed Composites: A New Impetus, *Proc. INFRA 2002*, (Invited Paper) Montreal, November 2002.

\*In addition, there are book reviews, conference reports, and undergraduate student theses that are not listed in the interest of brevity.