

## Christopher A. Brown – Publications -February 2006

### In progress

1. Christopher A. Brown (2), Robert S. Hahn, Ryan M. St. Gelais, Brendan Powers, Douglas J. Geiger, Torbjorn S. Bergstrom, Grinding Wheel Texture and Diamond Roll Dressing Conditions, in progress Feb 2006
2. Robert S. Scott, Peter S. Ungar, Torbjorn S. Bergstrom, Christopher A. Brown, Ben Childs, Mark F. Teaford, Alan Walker, Dental microwear texture analysis - submitted to Journal of Human Evolution 30 Dec 05
3. P. Narayan1, B. Hancock, R. Hamel, T.S. Bergstrom, C.A. Brown, "Using fractal analysis to differentiate the surface topography of various pharmaceutical excipient compacts" submitted to J. of Material Science and Engineering. April 2005 revised and resubmitted Feb 6, 2006.
4. J. Kummilil, D. J. Geiger1, R. S. Hahn, C.A. Brown, "Measurement and Analysis of Forces in Diamond Roll Dressing," submitted to J. for Manufacturing Processes, March 2005
5. C. A. Brown, "Axiomatic Design and the Evolution of Conventional Alpine Ski Bindings" submitted 1/10/05 to Theoretical Issues in Ergonomics Science, in revision.
6. C.A. Brown Teaching Axiomatic Design to Engineers – Theory, Applications, and Software, Submitted to Looking Forward Innovations in Manufacturing Engineering Education, Cal Poly SLO 22-25 June 2005 – submitted to JMS

### Peer Reviewed Journals

1. Vilbett Briones, Christopher A. Brown, José M. Aguilera, "Scale-sensitive fractal analysis of the surface roughness of bloomed Chocolate" resubmitted 12-21-05. Accepted Jan 2006. J. American Oil Chemists Society.
  2. S.E. Jordan, C.A. Brown, "Comparing Texture Characterization Parameters on Their Ability to Differentiate Ground Polyethylene Ski Bases" submitted to Wear 2/2/2005, revised and accepted 12/12/05.
  3. Briones, V., Brown, C. & Aguilera, J.M. (2005). Effect of surface topography on color and gloss of chocolate samples. *Journal of Food Engineering (available online 22 September 2005)*.
  4. R.J. Hocken (1), N. Chakraborty, C. Brown (2), "Optical Metrology of Surfaces," Annals of the CIRP 54/2 (2005) 705-719.
  5. Roberto Quevedo, Christopher Brown, Pedro Bouchon and José M. Aguilera, "Surface roughness during storage of chocolate: Fractal analysis and possible mechanisms" J. American Oil Chemists Society, June (2005) 457-462.
  6. Robert S. Scott, Peter S. Ungar, Torbjorn S. Bergstrom, Christopher A. Brown, Frederick E. Grine, Mark F. Teaford, Alan Walker, "Dental microwear texture analysis within-species diet variability in fossil hominins," Nature vol 436/4 (2005) 693-695.
  7. John Kummilil, Carmine Sammarco, David Skinner, Christopher A. Brown, Kevin Rong, Effect of Select LENS™ Processing Parameters on the Deposition of Ti-6Al-4V, Journal of Manufacturing Processes 7/1 (2005) 42-50.
  8. S. Kohles, M. B. Clark, C.A. Brown, J. Kenealy, "Direct Assessment of Profilometric Roughness Variability from Typical Implant Surface Types," The International Journal of Oral & Maxillofacial Implants, v19/4 (2004) 510-515.
  9. Peter S. Ungar, Christopher A. Brown, Torbjorn S. Bergstrom, Alan Walker, "Quantification of dental microwear by tandem scanning confocal microscopy and scale-sensitive fractal analyses," Scanning 25 (2003) 185-193.
  10. G.A. McRae, M.A. Maguire, C.A. Jeffrey, D.A. Guzonas, C.A. Brown, "Atomic Force Microscopy of Fractal Anodic Oxides on Zr-2.5Nb" J of Applied Surface Science. 191/1-4 (2002) 94-105. [http://dx.doi.org/10.1016/S0169-4332\(02\)00165-4](http://dx.doi.org/10.1016/S0169-4332(02)00165-4)
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11. F. Pedreschi, J.M.Aguilera, C.A.Brown, "Characterization of the surface properties of chocolate using scale-sensitive fractal analysis," *International Journal of Food Properties*, 5/3 (2002) 523-535.
12. Bi Zang, X. Liu, C.A.Brown, T.S.Bergstrom, "Microgrinding of Nanostructured Material Coatings," *Annals of the CIRP* 51/1 (2002) 251-254.
13. K. Articus, C.A. Brown, and K.P. Wilhelm, "Scale-sensitive fractal analysis using the patchwork method for the assessment of skin roughness," *Skin Research and Technology*, 7 (2001) 164-167.
14. C.A. Brown and S. Siegmann, "Fundamental scales of adhesion and area-scale fractal analysis," *International Journal of Machine Tools and Manufacture*, 41 (2001) 1927-1933.
15. T.S. Bergstrom and C.A. Brown, "Interaction between Horizontal Scanning Instruments and Surfaces," *International Journal of Machine Tools and Manufacture*, 41 (2001) 1995-2000.
16. C.A. Brown, "Issues in modeling machined surface textures," *Machining Science and Technology* 4/3 (2000) 539-546.
17. L. DeChiffre, P. Lonardo, H. Trumphold, D.A. Lucca, G. Goch, C.A. Brown, J. Raja, H.N. Hansen, "Quantitative Characterization of Surface Texture," *Annals of the CIRP*, 49/2 (2000) 635-652.
18. Franco Pedreschi, José M. Aguilera, C.A. Brown, "Quantitative characterization of food surfaces using scale-sensitive fractal analysis," *Journal of Food Process Engineering*, 23/2 (2000) 127-143.
19. F.E. Kennedy, C.A. Brown, J. Kolodny, B.M. Sheldon, "Fractal analysis of hard disk surface roughness and correlation with static and low-speed friction," *ASME Journal of Tribology*, 121/4 (1999) 968-974.
20. C.A. Brown, W.A. Johnsen, K.M. Hult, "Scale-sensitivity, Fractal Analysis and Simulations," *International Journal of Machine Tools and Manufacturing*, 38/5-6 (1998) 633-637.
21. A.J. Terry, C.A. Brown, "A comparison of topographic characterization parameters in grinding," *Annals of the CIRP*, 46/1 (1997) 479-500.
22. S. Vasekaran, C.A. Brown, "Single discharge, spark erosion in TiB<sub>2</sub> and zinc, Part I: Experimental," *Journal of Materials Processing Technology*, 58 (1996) 70-78.
23. C.A. Brown, W.A. Johnsen, R.M. Butland, "Scale-sensitive fractal analysis of turned surfaces," *Annals of the CIRP*, 45/1 (1996) 515-518.
24. D.J. Whitehouse, D.K. Bowen, V.C. Venkatesh, P. Leonardo, and C.A. Brown, "Gloss and Surface Topography," *Annals of the CIRP*, 2 (1994) 1-9.
25. C.A. Brown, "A Method for Concurrent Engineering Design of Chaotic Surface Topographies," *Journal of Materials Processing Technology*, 44 (1994) 337-344.
26. C.A. Brown, B. Meacham, "Tiling Strategies in the Patchwork Method and the Determination of Scale-Area Relations," *Fractals*, 2/3 (1994) 433-436.
27. P.D. Charles, C.A. Brown, "The Patchwork Method and Image Processing," *Fractals*, 2/3 (1994) 169-171.
28. P.D. Charles, C.A. Brown, W.A. Johnsen, "Inverse Patchwork Transform," *Fractals*, 2/3 (1994) 165-167.
29. W.A. Johnsen, C.A. Brown, "Comparison of Several Methods for Calculating Fractal-Based Topographic Characterization Parameters," *Fractals*, 2/3 (1994) 437-440.
30. C.A. Brown, "Concurrent Design of Engineering Surfaces Using Patchwork Analysis," *Fractals*, 2/3 (1994) 423-42.
31. H.Gan, P.L.Levin, C.A.Brown, Modeling and analysis of the electric field for a canonical problem in EDM, *Compel-The International Journal for Computation and Mathematics in Electrical and Electronic Engineering* 12/1 (1993) 1-19
32. E.M. Shipulski, C.A. Brown, "A Scale-Based Model of Reflectivity," *Fractals*, 2/3 (1994) 413-416.
33. C.A. Brown, P.D. Charles, W.A. Johnsen, S. Chesters, "Fractal Analysis of Topographic Data by the Patchwork Method," *Wear*, 161 (1993) 61-67.
34. C.A. Brown, "Surface Roughness Characterization," *Oberflächenwerkstoffe*, 34/12 (1993) 8-11.
35. C.A. Brown, G. Savary, "Describing Ground Surface Texture using Contact Profilometry and Fractal Analysis" *Wear*, 141 (1991) 211-226.
36. D.F. Dauw, C.A. Brown, J.P. van Griethuysen, and J.F.L.M. Albert, "Surface Topography Investigations by Fractal Analysis of Spark Eroded Electrically Conductive Ceramics," *Annals of the CIRP*, 39/1 (1990) 161-165.

37. C.A. Brown, F. Dupont, B. Senior, "Machined Surface Flaws on the High Strength Aluminum Alloys 2024 and 7075," *Materials Science and Engineering*, A118 (1989) 53-58.
38. C.A. Brown, M.K. Surappa, "Machinability of an Aluminium-Graphite Composite," *Materials Science and Engineering A*, 102 (1988) 31-37.
39. C.A. Brown, F. Dupont, B. Ilschner, "Microstructure and Microhardness in the Superficial Layers Deformed Machining 7075 Aluminium Alloy" *Z. Metallkunde*, B79 H2 (1988) 74-80.
40. C.A. Brown, "Metallographic Analysis of Strain Patterns in Machining Chips," *Metallography*, 20 (1987) 465-483.
41. C.A. Brown, E. El Batawi, F. Dupont and B. Ilschner, "Microstructural Analysis of Machined and Fatigued Surfaces in 2024 Al," *Microstructural Science*, 15 (1987) 383-392.
42. C.A. Brown, F. Dupont, E. El Batawi, "Preparation of TEM Specimens Parallel and Perpendicular to Machined Surfaces in 7075 and 2024 Al," *Practical Metallography*, 23 (1986) 493-501.
43. S.W. Hejmej, C.A. Brown, "Influence on Low Temperature Thermo-Mechanical Treatment on some Properties of High Alloy Tool Steels," *Journal of Engineering for Industry*, Trans. ASME, 107 (1985) 119-126.
44. C.A. Brown, "A Practical Method for Estimating Machining Forces from Toolchip Contact Area," *Annals CIRP*, 32/1 (1983) 91-95.

**Conference proceedings (many are peer reviewed – there are some about which I am uncertain)**

1. E. Odom, S. Beyerlein, C. A. Brown, D.Drew, L.Gallup, S.Zimmerman, J.Olberding, "Role of Axiomatic Design in Teaching Capstone Courses," *Proceedings of the 2005 American Society for Engineering Education Annual conference & Exposition 2005 ASEE*, [http://www.asee.org/acPapers/2005-1866\\_Final.pdf](http://www.asee.org/acPapers/2005-1866_Final.pdf).
2. C.A. Brown, "Lessons in Teaching Axiomatic Design to Engineers" *SAE 2005 World Congress Detroit April 13 2005*, SAE paper SP 1956, Reliability and Robust Design in Automotive Engineering 2005-01-1523. [http://www.sae.org/servlets/productDetail?PROD\\_CD=2005-01-1523&PROD\\_TYP=PAPER](http://www.sae.org/servlets/productDetail?PROD_CD=2005-01-1523&PROD_TYP=PAPER)
3. C.A.Brown, *Teaching Axiomatic Design to Engineers: Theory, Applications, and Software, Looking Forward: Innovations in Manufacturing Engineering Education, CIMEC (CIRP International Manufacturing Education Conference) 2005 and 3rd SME International Conference on Manufacturing Education*, 2005, pp. 41-51.
4. S.E.Jordan, T.S.Bergstrom, D.J.Geiger, C.A.Brown, *Surface Metrology of Ski Base Textures*, 3rd International Congress on Skiing and Science, 2004 Aspen, Colorado USA March 28 - April 2, 2004, Science and Skiing III, Erich Müller, Dave Bachacrach, Riggs Klika, Stefan Lindinger, Hermann Schwameder editors, Oxford: Meyer and Meyer Sports (2005) p 411-422.
5. Torbjorn S. Bergstrom, Rebecca A. Hamel, John Kummilil, Amy R. Gray, Christopher A. Brown, *Comparison of surface texture measurement systems*, XIth International Colloquium on Surfaces, 2-3 February 2004 Chemnitz, Germany, Conference Proceedings Part I, 2004 Shaker Verlag, Aachen (ISBN 3-8322-2418-1) p 13-21.
6. Christopher A. Brown, Rebecca Hamel, John Kummilil, Mark O'Connell, Torbjorn S. Bergstrom, "Analyzing the Accuracy of Surface Measurement Systems and Replicas 9th International Conference on the Metrology and Properties of Engineering Surfaces, Halmstead, Sweden, 2003.
7. J.Kummilil, D.Geiger, T. Bergstrom, V.Varbanova, C.A.Brown, *Measurement Uncertainty in Scanning Instruments Due to Data Acquisition Methods*, *Proceedings of the American Society of Precision Engineers 2003*.
8. T.S. Bergstrom, C.A. Brown, "Scale Sensitive Fractal Analysis of Food Surfaces", *Scanning, The Journal of Scanning Microscopies*, 23/2, FAMS, Inc., Mahwah, N.J. USA, pp 104-105, May/June, 2001.
9. V. Ulcickas, I. Bar-On, C.A. Brown, "Using Area-scale Relations to Investigate Y-TZP Fractures". *Fractography of Glasses and Ceramics IV*, *Ceramic Transactions v 122*, *Proceedings of the fourth Alfred Conference on the Fractography of Glasses and Ceramics*, July 9-12, 2000 at Alfred University, Alfred, NY, James R. Varner and Geroge D. Quinn Eds. *The American Ceramics Society*, Westerville, OH (2001) 211-224.

10. C.A. Brown, "Relating Surface Texture and Adhesion with Area-scale Fractal Analysis" Tech XXIV, Sharing global pressure sensitive tape innovations, proceedings, a global conference, 2-4 May, 2001 Orlando, FL, Pressure Sensitive Tape Council (2001) 49-58.
11. C.A. Brown, "Axiomatic Design of Chaotic Components of Surface Textures," Institute for Axiomatic Design, Cambridge, Derrick Tate, ed., (2000) 106-111.
12. T.S. Bergstrom and C.A. Brown, "Interaction between Horizontal Scanning Instruments and Surfaces," Metrology and Properties of Engineering Surfaces, 8th International Conference, Huddersfield 26-28 April 2000.
13. M.C. Malchiodi and C.A. Brown, "Area Scale Analysis for Understanding Fracture Energy," Metrology and Properties of Engineering Surfaces, 8th International Conference, Huddersfield 26-28 April 2000.
14. C.A. Brown and S. Siegmann, "Fundamental Scales of Adhesion and Area-scale Fractal Analysis," Metrology and Properties of Engineering Surfaces, 8th International Conference, Huddersfield 26-27 April 2000.
15. C.A. Brown and S. Siegmann, "A Method for Determining the Characteristic Scale for Adhesion for a Discrete Bonding Model on a Rough Substrate," Proceedings of the 10th International Colloquium of Surfaces Chemnitz, Germany, 31 January-2 February 2000, M.Dietzsch and H.Trumpold, Eds., Shaker Verlag, Aachen (2000) 196-204.
16. C.A. Brown, T.S. Bergstrom, K.A. Nucifora, "Upper Envelopes in Scale-series on Profiles," Proceedings of the 10th International Colloquium of Surfaces Chemnitz, Germany, 31 January-2 February 2000, M.Dietzsch and H.Trumpold, Eds., Shaker Verlag, Aachen (2000) 360-366.
17. T.S. Bergstrom, C.A. Brown, "Anisotropic Artifacts Introduced by Horizontal Scanning Instruments in Surface Metrology" Proceedings 14th Annual Meeting The American Society for Precision Engineering, Monterey, ASPE, Raleigh (1999) 376-379.
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19. S.D. Siegmann, C.A. Brown, "Scale-Sensitive Fractal Analysis for Understanding the Influence of Substrate Roughness in Thermal Spraying" 1st United Thermal Spray Conference - Thermal Spray: A United Forum for Scientific and Technological Advances C.C.Berndt, ed., ASM International, Materials Park, OH (1998) 665-670.
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23. C.A. Brown, P. Hoch, "Information Content in Surface Metrology for Functional Correlations," Proceedings of the Twelfth Annual Meeting of the American Society for Precision Engineering, American Society for Precision Engineering, Raleigh (1997) 118-121.
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26. C.A. Brown, "Scale-sensitive, Fractal Analysis for Understanding Roughness," Surfaces in Biomaterials '96, Minneapolis (1996) 71-76.
27. S. Siegmann, C.A. Brown, "Investigations on the Substrate Surface Morphology for Thermal Spray Coatings." Success of Materials by Combination, Proceedings of the 17th International SAMPE Europe Conference of the Society for the Advancement of Material Process Engineering,

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  32. C.A. Brown, W.A. Johnsen, R. Butland, "Scale-based analysis of ground surface roughness to support product and process design," Supergrind 1995, Grinding and Polishing with Superabrasives, Industrial Diamond Association of America, Skyland, NC and U Conn Center for Grinding Research & Development, Storrs, CT (1995) 222-231.
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  34. C.A. Brown, "Scale-Area Analysis and Roughness: A Method for Understanding the Topographic Component of Adhesive Strength," The Adhesion Society, Proceedings of the Seventeenth Annual Meeting and the Symposium on Particle Adhesion, Orlando Florida 20-23 February 1993, K.M. Liechti, Ed. The Adhesion Society, Library of Congress 94-070329 (1994) 5-7.
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  38. J.P. Valley, C.A. Brown, "Fractal Analysis of SEM Images of Silica Membrane Morphology," Inorganic Membranes, ICIM2-91, Burggraaff, Charpin and Cot, eds. Trans Tech Publications, Brookfield (1991) 83-88.
  39. J.P. Valley, C.A. Brown, "Characterizing the Surface and Internal Morphology of a Silica Membrane Using Fractal Analysis," Extended Abstracts, Scaling in Disordered Materials: Fractal Structure and Dynamics, J.P. Stokes, M.O. Robbins, T.A. Witten, eds., Materials Research Society, Pittsburgh (1990) 113-115.
  40. C.A. Brown, D.F. Dauw, "Investigations of Spark Eroded Electrically Conductive Ceramics by Fractal Analysis" NORDTRIB'90, PROCEEDINGS OF THE 4TH NORDIC SYMPOSIUM ON TRIBOLOGY, LUBRICATION, FRICTION AND WEAR, Hirtshals, Denmark, J. Jakobsen, M. Klarskov, M. Eis, eds., NORDTRIB '90, Lyngby, Denmark (1990) 159-174.
  41. C.A. Brown, D.F. Dauw, G. Savary, "Comparison of Fractal and Conventional Topographic Analysis of Electric Discharge Machined Surface Topography on Ceramics," Surface Engineering: Current Trends and Future Prospects S.A. Meguid, ed., Elsevier Applied Science, London (1990) 39-51.
  42. C.A. Brown, G. Savary, "Fractal Aspects of Machined Surface Topography Determined by Stylus Profilometry," Extended Abstracts, Fractal Aspects of Materials: Disordered Systems, D.A. Weitz, L.M. Sander, B.B. Mandelbrot, eds., Materials Research Society, Pittsburgh (1988) 275-277.
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46. C.A. Brown, A.H. Hoffman, R.K. Heinzmann, "Loss of Control in Alpine Skiing and Subsequent Trajectories," Skiing Trauma and Safety: Tenth Volume, ASTM STP 1266, C.D. Mote, Jr., et al. eds., ASTM, Philadelphia (1993) 186-195.
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48. M. Boreiko, A. Bally, F. Bonjour, C.A. Brown, "Modeling Forces on the ACL during Backward Falls while Skiing," Skiing Trauma and Safety: Seventh International Symposium, ASTM STP 1022, R.J. Johnson, C.D. Mote, Jr., M. Binet, eds., ASTM, Philadelphia (1989) 267-276 .
49. C.A. Brown, J.O. Outwater, "On the Skiability of Snow," Skiing Trauma and Safety: Seventh International Symposium, ASTM STP 1022, R.J. Johnson, C.D. Mote, Jr., M. Binet, eds., ASTM, Philadelphia (1989) 329-336.
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Book chapter (invited)

C.A. Brown, "Machining of Metals," Encyclopedia of Materials: Science and Technology, K.H. Jürgen Buschow et al. Eds., Pergamon, Amsterdam (2001) 4703-4708.