

Y. LAWRENCE YAO

Department of Mechanical Engineering
Columbia University
220 Mudd Bldg., MC 4703
New York, NY 10027

Tel: (212) 854-2887
Fax: (212) 854-3304
E-mail: yly1@columbia.edu
<http://aml.engineering.columbia.edu>

EDUCATION

PhD Mechanical Engineering, University of Wisconsin-Madison, 1988
MS Mechanical Engineering, University of Wisconsin-Madison, 1984
BE with honors Mechanical Engineering, Shanghai Jiao Tong University, China, 1982

ACADEMIC POSITIONS

1994-Current Professor (2001-Current), Department Chair (2005-2011), Associate Professor (1994-2001)
Department of Mechanical Engineering, Columbia University

1989-1994 Senior Lecturer (1991-1994)
Lecturer (1989-1991), Wollongong Campus
School of Mechanical and Manufacturing Engineering
University of New South Wales, Sydney, Australia

1983-1987 Graduate Research and Teaching Assistant
(1986-1987) (Teaching Fellow, various periods)
Department of Mechanical Engineering, University of Wisconsin-Madison

2011-2012 Fulbright Scholar, Industrial Laser Research Center, University of Vigo,
Spain

1991-1992 Visiting Research Fellow, Department of Mechanical Engineering and
Applied Mechanics, University of Michigan, Ann Arbor

HONORS AND AWARDS

- Milton C. Shaw Manufacturing Research Medal, ASME, June 2015.
- Outstanding Paper Award, NAMRI/SME, "Effect of Deep Penetration of Interleaf on Delamination Resistance in GFRP," co-authored with Bian, D., Bucher, T., and Tan, H., June 2015.
- NAMRI/SME Outstanding Lifetime Service Award, June 2015.
- Dedicated Service Award, American Society of Mechanical Engineers (ASME), Manufacturing Engineering Division, June 2014.
- Fulbright Scholar, Senior Researcher Award, Fall 2011.

- Faculty Excellence Award, School of Engineering and Applied Science, Columbia University, April 2010.
- Janette and Armen Avanesians Diversity Award, School of Engineering and Applied Science, Columbia University, May 2009.
- Elected Fellow, Society of Manufacturing Engineers (SME), 2008.
- 3rd Place Award, Student Paper Contest, "Pre-heated Substrate Effects on Melt-mediated Laser Crystallization on NiTi Thin Films" by Birnbaum, A., Chung, U.-J., Huang, X., Im, J.S., Ramirez A.G., Yao, Y.L., at 26th Int. Congress on Applications of Lasers and Electro-Optics (ICALEO '08): Conf. on Laser Microprocessing, Temecula, CA, Oct. 2008, pp. 332-341.
- Visiting Committee, Department of Scientific Research, Metropolitan Museum of Art, New York, NY, 2006 -
- Blackall Award, American Society of Mechanical Engineers (ASME), 2006.
- Elected Fellow, American Society of Mechanical Engineers, 2006.
- Elected Fellow, Laser Institute of America, 2004.
- 1st Place Award, Student Paper Contest, "Spatially Resolved Characterization of Residual Stress Induced by Micro Scale Laser Shock Peening," by Chen, H., Yao, Y. L., and Kysar, J., at 21st Int. Congress on Applications of Lasers and Electro-Optics (ICALEO '03): Conf. on Laser Materials Processing, Jacksonville, FL, Oct. 2003.
- Best Paper Award "Advances in Micro-scale Laser Shock Peening," the 5th Int. Conf. on Frontiers in Design and Manufacturing, Dalian, China, July 2002.
- Outstanding Paper Award "Convex laser forming with high certainty," North American Manufacturing Research Conference, Lexington, KY, May 2000.
- Sigma Xi Honor Society.

PROFESSIONAL MEMBERSHIP, SERVICE AND HONORS

- **American Society of Mechanical Engineers (ASME)**
 - Fellow
 - Editor, *Journal of Manufacturing Science and Engineering*
 - Past Chair, Manufacturing Engineering Division
- **Society of Manufacturing Engineers (SME)**
 - Fellow
 - Past President, past Scientific Committee member, North American Manufacturing Research Institution (NAMRI/SME).
 - Past Associate Editor, *Journal of Manufacturing Systems* and *Journal of Manufacturing Processes*.

- **Laser Institute of America (LIA)**
 - Fellow
 - Past Board of Directors
 - Past chair of Laser Materials Processing Conferences of ICALEO
- ***Chinese Journal of Mechanical Engineering***
 - Member, Editorial Board
- ***Machines: Machinery and Automation***
 - Member, Editorial Advisory Board

PATENTS

- Simulator and Optimizer for Laser Cutting Process, US patent #5,854,751, with Paul Di Pietro, 1998.
- Methods and systems for identifying and localizing objects based on features of the objects that are mapped to a vector. US patent #7,958,063, with Xi Long, and W Louis Cleveland, issued June 2011.
- Garty G., Brenner D.J., Randers-Pehrson G., Yao Y.L., Simaan N., Salerno A., Bhatla A., Zhang J., Lyulko O.V., Dutta A., Systems and Methods for High Throughput Radiation Biodosimetry. US Patent No. 7,822,249, issued October 26, 2010.
- Zhang J., Salerno A., Simaan N., Yao Y.L., Randers-Pehrson G., Garty G., Dutta A., Brenner D.J., Systems and Methods for Robotic Transport, US patent 7,787,681, issued August 31, 2010.

JOURNAL PUBLICATIONS

1. Yao, Y. L., and Wu, S. M., "Development of An Adaptive Position/Force Controller for Robot-Automated Composite Tape-layering," *ASME Trans. J. of Engineering for Industry*, Vol. 115, No. 3, 1993, pp. 352-358.
2. Yao, Y. L., and Wu, S. M., "Recursive Calibration of Industrial Manipulators by Adaptive Filtering," *ASME Trans. J. of Engineering for Industry*, Vol. 117, No. 3, 1995, pp. 406-411.
3. Yao, Y. L., Fang, X. D., and Arndt, G., "Comprehensive Tool Wear Estimation in Finish-Machining via Multivariate Time-Series Analysis of 3-D Cutting Forces," *Annals of CIRP (Int. Federation of Production Research)*, Vol. 39, No. 1, 1990, pp. 57-60.
4. Fang, X. D., Yao, Y. L., and Arndt, G., "Monitoring Groove Wear Development via Stochastic Modeling and Analysis of 3-D Vibration," *Wear*, Elsevier Scientific, Vol. 151, 1991, pp. 143-156.
5. Yao, Y. L., "Transient Lateral Motion of Robots in Cylindrical Part Mating," *Robotics and Computer-Integrated Manufacturing, Int. J.*, Pergamon, Vol. 8, No. 2, 1991, pp. 103-111.

6. Yao, Y. L., Fang, X. D., and Arndt, G., "On-line Estimation of Groove Wear in the Minor Cutting Edge for Finish-Machining" *Annals of CIRP (Int. Federation of Production Research)*, Vol. 40, No. 1, 1991, pp. 41-44.
7. Yao, Y. L., and Fang, X. D., "Modeling of Multivariate Time Series for Tool Wear Estimation in Finish-Machining," *Int. J. Machine Tools & Manufacture*, Pergamon, Vol. 32, No. 4, 1992, pp. 495-508.
8. Weston, K. C. and Yao, Y. L., "Integrating Robotics and Solid Modeling in a Sophomore Design Project," *ASEE Journal Computers in Education*, Vol. 9, No. 4, 1989, pp. 64-70.
9. Yao, Y. L., and Mohd Yusoff, M. R., "A CAD Based Error Mapping and Layout Facility for Precision Robotic Operations," *Robotics and Computer-Integrated Manufacturing, Int. J.*, Pergamon, Vol. 9, No. 6, 1992, pp. 505-511.
10. Yao, Y. L., and Fang, X. D., "Assessment of Chip Forming Patterns with Tool Wear Progression in Machining via Neural Networks," *Int. J. Machine Tools & Manufacture*, Pergamon, Vol. 33, No. 1, 1993, pp. 89-102.
11. Yao, Y. L., Korayem, M. H., and Basu, A., "Maximum Allowable Load of Flexible Manipulators for Given Dynamic Trajectory," *Robotics and Computer-Integrated Manufacturing, Int. J.*, Pergamon, Vol. 10, No. 4, 1993, pp. 301-309.
12. Di Pietro, P., and Yao, Y. L., "An Investigation into Characterizing and Optimizing Laser Cutting Quality - A Review," *Int. J. Machine Tools & Manufacture*, Pergamon, Vol. 34, No. 3, 1994, pp. 225-243.
13. Korayem, M. H., Yao, Y. L., and Basu, A., "Application of Symbolic Manipulation to Inverse Dynamics and Kinematics of Elastic Robots," *Int. J. Advanced Manufacturing Technology*, Springer-Verlag, Vol. 9, No. 5, 1994, pp. 343-350.
14. Di Pietro, P., and Yao, Y. L., "Effects of Workpiece Boundary and Motion on Laser Cutting Front Phenomena," *J. Materials Processing Technology*, Elsevier Scientific, Vol. 44, 1994, pp. 237-245.
15. Di Pietro, P., and Yao, Y. L., "A Numerical Investigation into Cutting Front Mobility in CO₂ laser Cutting," *Int. J. Machine Tools & Manufacture*, Pergamon, Vol. 35, No. 5, 1995, pp. 673-688.
16. Di Pietro, P., and Yao, Y. L., "A New Technique to Characterize and Predict Laser Cut Striations," *Int. J. Machine Tools & Manufacture*, Pergamon, Vol. 35, No. 7, 1995, pp. 993-1002.
17. Fang, X. D., and Yao, Y. L., "Appropriate Introduction of Computer Control to Mechanical Engineering Students," *Int. J. of Mechanical Engineering Education*, Vol. 23, No. 4, 1995, pp. 273-284.
18. Fang, X. D., and Yao, Y. L., "In-Process Evaluation of Overall Machining Performance via a Single Data Source," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 119, No. 3, 1997, pp. 444-447.
19. Di Pietro, P., and Yao, Y. L., "Improving Laser Cutting Quality for Two-Dimensional Contoured Paths," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 120, No. 3, 1998, pp. 590-599.

20. Soltz, M., Yao, Y. L., and Ish-Shalom, J., "Investigation of a 2-D Planar Motor Based Machine Tool Motion System," *Int. J. Machine Tools & Manufacture*, Pergamon, Vol. 39, 1999, pp. 1157-1169.
21. Huang, Z., and Yao, Y. L., "Extension of Usable Workspace of Rotational Axes in Robot Planning," *Robotica*, Cambridge Univ. Press, Vol. 17, 1999, pp. 293-301.
22. Huang, Z., and Yao, Y. L., "A New Closed-Form Kinematics of the Generalized 3-DOF Spherical Parallel Manipulator," *Robotica*, Cambridge Univ. Press, Vol. 17, 1999, pp. 475-485.
23. Chen, K., and Yao, Y. L., "Striation Formation and Melt Removal in Laser Cutting Process," *J. Manufacturing Processes*, Society of Manufacturing Engineers, Vol. 1, No. 1, 1999, pp. 43-53.
24. Yao, Y. L., and Cheng, W., "Model based Motion Planning of Robot Assembly of Non-Cylindrical Parts," *Int. J. Advanced Manufacturing Technology*, Springer-Verlag, Vol. 15, 1999, pp. 683-691.
25. Chen, K., Yao, Y. L., and Modi, V., "Numerical Simulation of Oxidation Effects in Laser Cutting Process," *Int. J. Advanced Manufacturing Technology*, Springer-Verlag, Vol. 15, 1999, pp. 835-842.
26. Di Pietro, P., Yao, Y. L., and Jeromin, A., "Quality Optimization for Laser Machining under Transient Conditions," *J. Materials Processing Technology*, Elsevier Scientific, Vol. 97, 2000, pp. 158-167.
27. Chen, K., and Yao, Y. L., "Process Optimization of Pulsed Laser Micromachining with Applications in Medical Device Manufacturing," *Int. J. Advanced Manufacturing Technology*, Springer-Verlag, Vol. 16, 2000, pp.243-249.
28. Chen, K., and Yao, Y. L., "Interactive Effects of Reactivity and Melt Flow in Laser Machining," *Int. J. High Temperature Material Processes, Special Issue on Laser Materials Processing*, edited by Yao, Y. L., invited paper, Vol. 4, No.2, 2000, pp.227-252.
29. Li, W., Bao, J., and Yao, Y. L., "Dimensional Characteristics and Mechanical Properties of Laser-Formed Parts," *Int. J. High Temperature Material Processes, Special Issue on Laser Materials Processing*, edited by Yao, Y. L., invited paper, Vol. 4, No.2, 2000, pp.253-290.
30. Chen, K., Yao, Y. L., and Modi, V., "Gas Jet - Workpiece Interactions in Laser Machining," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 122, No. 3, 2000, pp. 429-438.
31. Li, W., and Yao, Y. L., "Numerical and Experimental Study of Strain Rate Effects in Laser Forming," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 122, No. 3, 2000, pp. 445-451.
32. Abdul Majid, M. Z., Huang, Z., and Yao, Y. L., "Workspace Analysis of a Six-DOF, Three-PPSR Parallel Manipulator," *Int. J. Advanced Manufacturing Technology*, Pergamon, Vol. 16, 2000, pp. 441-449.
33. Li, W., and Yao, Y. L., "Laser Forming with Constant Line Energy," *Int. J. Advanced Manufacturing Technology*, Pergamon, Vol. 17, 2001, pp. 196-203.

34. Bao, J., and Yao, Y. L., "Analysis and Prediction of Edge Effects in Laser Bending," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 123, No. 1, 2001, pp. 53-61.
35. Chen, K., Yao, Y. L., and Modi, V., "Gas Dynamic Effects on Laser Cutting Quality," *SME J. of Manufacturing Processes*, Vol. 3, No. 1, 2001, pp. 38-49.
36. Cheng, J., and Yao, Y. L., "Cooling Effects in Multiscan Laser Forming," *SME J. of Manufacturing Processes*, Vol.3, No.1, 2001, pp. 60-72.
37. Li, W., and Yao, Y. L., "Laser Bending of Tubes: Mechanism, Analysis, and Prediction," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 123, No. 4, 2001, pp. 674-681.
38. Zhang, W., Yao, Y. L., and Chen, K., "Modeling and Analysis of UV Laser Micromachining of Copper," *Int. J. Advanced Manufacturing Technology*, Pergamon, Vol. 18, 2001, pp.323-331.
39. Lu, X., Yao, Y. L., and Chen, K., "A Low Diffraction Laser Beam as Applied to Polymer Ablation," *J. of Laser Applications*, Laser Institute of America, Vol. 13, No. 5, 2001, pp.209-217.
40. Li, W., and Yao, Y. L., "Numerical and Experimental Investigation of Convex Laser Forming Process," *SME J. of Manufacturing Processes*, Vol. 3, No.2, 2001, pp. 73-81.
41. Zhang, W., and Yao, Y. L., "Micro-scale Laser Shock Processing: Modeling, Testing, and Microstructure Characterization," *SME J. of Manufacturing Processes*, Vol. 3, No.2, 2001, pp. 128-143.
42. Lu, X., Yao, Y. L., and Chen, K., "Experimental Investigation of Polymer Material Removal by Low Diffraction Laser Beam," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 124, No. 2, May 2002, pp. 475-480.
43. Zhang, W., and Yao, Y. L., "Micro-scale Laser Shock Processing of Metallic Components," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 124, No. 2, May 2002, pp. 369-378.
44. Cheng, J., and Yao, Y. L., "Microstructure Integrated Modeling of Multiscan Laser Forming," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 124, No. 2, May 2002, pp. 379-388.
45. Liu, C., and Yao, Y. L., "Optimal and Robust Design of Laser Forming Process," *SME J. of Manufacturing Processes*, Vol. 4, No.1, 2002, pp. 52-66.
46. Liu, C., Yao, Y. L., and Srinivasan, V., "Optimal Process Planning for Laser Forming of Doubly Curved Shapes," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 126, No. 1, Feb 2004, pp. 1-9.
47. Zhang, W., Yao, Y. L., and I. C. Noyan, "Microscale Laser Shock Peening of Thin Films, Part I: Experiment, Modeling and Simulation," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 126, No. 1, Feb 2004, pp. 10-17.
48. Zhang, W., Yao, Y. L., and I. C. Noyan, "Microscale Laser Shock Peening of Thin films, Part II: High Spatial Resolution Material Characterization," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 126, No. 1, Feb 2004, pp. 18-24.

49. Cheng, J., and Yao, Y. L., "Process Design of Laser Forming for Three Dimensional Thin Plates," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 126, No. 2, May 2004, pp.217-225.
50. Chen, H., Yao, Y. L., and Kysar, J., "Spatially Resolved Characterization of Residual Stress Induced by Micro Scale Laser Shock Peening," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 126, No. 2, May 2004, pp.226-236.
51. Cheng, J., and Yao, Y. L., "Process Synthesis of Laser Forming by Genetic Algorithms," *Int. J. of Machine Tools and Manufacture, UK*, Vol. 44, No.15, 2004, pp.1619-1628.
52. Chen, H. and Yao, Y. L., "Modeling Schemes, Transiency, and Strain Measurement for Microscale Laser Shock Processing," *SME J. of Manufacturing Processes*, Vol.6, No.2, 2004, pp.155-169.
53. Chen, H., Kysar, J., and Yao, Y. L., "Characterization of Plastic Deformation Induced by Micro Scale Laser Shock Peening," *ASME Trans. J. of Applied Mechanics*, Vol.71, No.3, 2004, pp.713-723.
54. Chen, H., Wang, Y., Kysar, J. W., Yao, Y. L., "Systematical Characterization of Material Response to Micro Scale Laser Shock Peening," *Special Issue on Micro/Meso Manufacturing, ASME Trans. J. of Manufacturing Science and Engineering*, Vol.26, No.4, Nov. 2004, pp.740-749.
55. Chen, H., Wang, Y., Kysar, J. W., Yao, Y. L., "Advances in Micro Scale Laser Shock Peening," *Tsinghua Science and Technology, Journal*, Vol. 9, No. 5, Oct. 2004, pp.506-518.
56. Yao, Y. L., Chen, H., and Zhang, W., "Time Scale Effects in Laser Material Removal --- A Review," *Int. J. Advanced Manufacturing Technology, UK*, Vol, 26, 2005, pp.598-608.
57. Chen, H., Yao, Y. L., Kysar, J. W., Noyan, I. C., and Wang, Y., "Fourier Analysis of X-ray Microdiffraction Profiles to Characterize Laser Shock Peened Metals," *Int. J. of Solids and Structures*, Vol. 42, 2005, pp.3471-3485.
58. Yao, Y. L., Cheng, G. J., Rajurkar, K. P., Kovacevic, R., Feiner, S., and Zhang, W., "A Web based Curriculum Development on Non Traditional Manufacturing with Interactive Features," *International Journal of Engineering Education*, Vol. 21(3), 2005, pp. 546-553.
59. Yao, Y. L., Cheng, G. J., Rajurkar, K. P., Kovacevic, R., Feiner, S., and Zhang, W., "Combined Research and Curriculum Development of Nontraditional Manufacturing," *European J. Engineering Education*, Vol. 30-3, September 2005, pp. 363-376.
60. Long, X., Cleveland, W. L., and Yao, Y. L., "A New Preprocessing Approach to Cell Recognition," *IEEE Trans. on Information Technology in Biomedicine*, Vol.9, No.3, 2005, pp.407-412.
61. Fan, Y., Wang, Y., Vukelic, S., and Yao, Y. L., "Wave-solid interactions in shock induced deformation processes," *J. Applied Physics*, 98, Issue 10, 104904, 15 Nov 2005, 11 pages.
62. Fan, Y., Yang, Z., Cheng, P., Egland, K., Yao, Y. L., "Effects of Phase Transformations on Laser Forming of Ti-6Al-4V Alloy," *J. Applied Physics*, Vol. 98, Issue 1, 013518, 1 July 2005, 10 pages.

63. Cheng, P., Yao, Y. L., Liu, C., Pratt, D., and Fan, Y., "Analysis and Prediction of Size Effect on Laser Forming of Sheet Metal," *SME J. of Manufacturing Processes*, Vol. 7, No. 1., 2005, pp.28-41.
64. Liu, C., and Yao, Y. L., "FEM based Process Design for 3D Laser Forming," *SME J. of Manufacturing Processes*, Vol. 7, No. 2, 2005, pp. 109-121.
65. Long, X., Cleveland, W. L., and Yao, Y. L., "Effective Automatic Recognition of Cultured Cells in Bright Field Images Using Fisher's Linear Discriminant Preprocessing," *Image and Vision Computing*, Vol. 23, 2005, pp.1203-1213.
66. Cheng, P., and Yao, Y. L., "The Influence of Sheet Metal Anisotropy on Laser Forming Process," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 127, Issue 3, August 2005, pp.572-582.
67. Zhang, J., Cheng, P., Zhang, W., Graham, M., Jones, J., Jones, M., Yao, Y. L., "Effect of Scanning Schemes on Laser Tube Bending," *ASME Trans. J. of Manufacturing Science and Engineering*, vol. 128, 2006, pp. 20-33.
68. Zhang, J., Wang, Y., Cheng, P., and Yao, Y.L., "Effect of Pulsing Parameters on Laser Ablative Cleaning of Copper Oxides," *J. Applied Physics*, **99**, 064902, 2006, 11 pages.
69. Long, X., Cleveland, W. L., and Yao, Y. L., "Automatic Detection of Unstained Viable Cells in Bright Field Images Using a Support Vector Machine with an Improved Training Procedure," *Computers in Biology and Medicine*, *36*, 2006, pp. 339-362.
70. Cheng, P., Fan, Y., Zhang, J., Yao, Y. L., Mika, D., Graham, M., Zhang, W., Marte, J., Jones, M., "Laser Forming Process of Varying Thickness Plate – Part I: Process Analysis," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 128, August 2006, pp. 634-641.
71. Cheng, P., Fan, Y., Zhang, J., Yao, Y. L., Mika, D., Graham, M., Zhang, W., Marte, J., Jones, M., "Laser Forming Process of Varying Thickness Plate – Part II: Process Synthesis," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 128, August 2006, pp. 642-650.
72. Fan, Y., Yang, Z., Cheng, P., Eglund, K., and Yao, Y. L., "Investigation of Effect of Phase Transformations on Mechanical Behavior of AISI 1010 Steel in Laser Forming," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 129, FEBRUARY 2007, pp.110-116.
73. Wang, Y., Chen, H., Kysar, J. W., and Yao, Y. L., "Response of Thin Films and Substrate to Micro Scale Laser Shock Peening," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 129, June 2007, pp. 485-496.
74. Birnbaum, A. J., Cheng, P., and Yao, Y. L., "Effects of Clamping on Laser Forming Process", *ASME J. of Manufacturing Science and Engineering*, Vol. 129, Dec. 2007, pp. 1035-1044.
75. Wang, Y., Fan, Y., Vukelic, S., and Yao, Y. L., "Energy Level Effects on Deformation Mechanism in Micro-scale Laser Peen Forming", *SME J. of Manufacturing Process*, Vol. 9, Issue 1, 2007, pp. 1-12.

76. Jie Zhang, Andrew J. Birnbaum, Fen Xu, John R. Lombardi, Y. Lawrence Yao, "Effect of Fluence on the Discoloration of Marble Cleaned with UV Lasers" *Applied Surface Science*, v 253, n 6, Jan 15, 2007, p 3083-3092.
77. Chen, H., Wang, Y., Kysar, J. W., Yao, Y. L., "Study of anisotropic character induced by microscale laser shock peening on a single crystal aluminum," *J. of Applied Physics*, **101**, 024904, 2007.
78. Fan, Y., Wang, Y., Vukelic, S., and Yao, Y. L., "Numerical Investigation of Opposing Dual Sided Micro Scale Laser Shock Peening," *ASME J. of Manufacturing Science and Engineering*, Vol 129, April 2007, pp. 256-264.
79. Wang, Y, Kysar, J. W., and Yao, Y. L., "Analytical Solution of Anisotropic Plastic Deformation Induced by Micro-scale Laser Shock Peening", *Mechanics of Materials*, **40**, 2008, pp. 100-114.
80. Long, X., Cleveland, W. L., and Yao, Y. L., "Multiclass Detection of Cell Mixture in Bright Field Images with Multiclass ECOC Probability Estimation," *Image and Vision Computing*, **26**, 2008, pp. 578-591.
81. Wang, Y. Vukelic, S., Kysar, J.W., and Yao, Y.L., "Micro-scale Laser Peen Forming of a Single Crystal," *J. of Applied Physics*, **103**, 063525 (2008).
82. Zhang, J., Birnbaum, A.J., Yao, Y.L., Xu, F., Lombardi, J.R., "Mechanism and Prediction of Laser Wet Cleaning of Marble Encrustation," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol.130, Issue 3, 031012, 11 pages, 2008.
83. Wang, Y. Vukelic, S., Kysar, J.W., and Yao, Y.L., "Spatially Resolved Characterization of Geometrically Necessary Dislocation Dependent Deformation in Microscale Laser Shock Peening," *J. Manuf. Sci. Eng.*, August 2009, Volume 131, Issue 4, 041014 (9 pages).
84. Vukelić, S., Wang, Y., Kysar, J. W., and Yao, Y. L., (2009) "Dynamic Material Response of Aluminum Single Crystal Under Micro Scale Laser Shock Peening," *ASME Journal of Manufacturing Science and Engineering*, Volume 131, Issue 3, 031015 (10 pages).
85. Vukelic, S., Kysar, J.W., and Yao, Y. L., "Grain Boundary Response of Aluminum Bicrystal Under Microscale Laser Shock Peening," *Int J. of Solids and Structures*, **46** (2009) 3323–3335.
86. Birnbaum, A., Chung, U.-J., Huang, X., Im, J., Ramirez, A. G., and Yao, Y.L., "Substrate Temperature Effects on Laser Crystallized NiTi Thin Films," *Journal of Applied Physics*, Vol 105, 073502 (2009).
87. Bhatla, A., and Yao, Y.L., "Effect of Laser Surface Modification on Crystallinity of poly (lactic acid)," *ASME Trans. J. of Manufacturing Science and Engineering*, Oct. 2009, Volume 131, Issue 5, 051004 (11 pages).
88. A.J. Birnbaum, U.J. Chen, X. Huang, A.G. Ramirez, Y.L. Yao and J.S. Im, "On the Lateral Crystal Growth of Laser Irradiated NiTi Thin Films," *Applied Physics Letters*, **94**, 261908 (2009).
89. A.J. Birnbaum, U.J. Chen, X. Huang, A.G. Ramirez, Y.L. Yao and J.S. Im, "Substrate Temperature Effects on Laser Crystallized NiTi Thin Films," *Journal of Applied Physic*, Vol 105, Issue 7, 073502 (2009), 10 pages.

90. AJ Birnbaum, G Satoh, YL Yao, "Functionally grading the shape memory response in NiTi films: Laser irradiation," *Journal of Applied Physics* 106 (4), 043504-043504-8, 2009.
91. Vukelic, S., Wang, Y., Kysar, J.W., and Yao, Y. L., "Comparative Study of Symmetric and Asymmetric Deformation of Al Single Crystal Under Micro Scale Laser Shock Peening," *Journal of Mechanics of Materials and Structures*, Vol.4, No.1, 2009, pp. 89-105.
92. Long, X., Cleveland, W.L., and Yao, Y. L., "Multiclass Detection Of Cells In Multicontrast Composite Images," *Computers in Biology and Medicine*, **40** (2010) 168-178.
93. Garty, G., Chen, Y., Salerno, A., Turner, H., Zhang, J., Lyulko, O.V., Xu, Y., Wang, H, Simaan, N., Randers-Pehrson, G., Yao, Y.L., Admundson, S., Brenner, D.J., "The RABIT: A Rapid Automated Biodosimetry Tool for radiological Triage," *Health Physics Journal*, 2010, vol. 98, No. 2, pp. 209-217 (9 pages).
94. Vukelić, S., Noyan, I. C., Kysar, J. W., Yao, Y. L., "Characterization of Heterogeneous Response of Al Bicrystal Subject to Micro Scale Laser Shock Peening," *Int. J. Experimental Mechanics*, DOI 10.1007/s11340-010-9380-0, published online 23 July 2010.
95. Birnbaum, A., Yao, Y.L., "The Effects of Laser Forming on Superelastic NiTi Shape Memory Alloys," *ASME Trans. J. of Manufacturing Science and Engineering*, August 2010, Vol. 132, 041002-1 to 8. (Top 10 Most Downloaded Articles – August 2010)
96. Kongsuwan, P, Vukelic, S., Wang, H., Yao, Y.L., "Characterization of Morphology and Mechanical Properties of Glass Interior Irradiated by Femtosecond Laser," *ASME Trans. J. of Manufacturing Science and Engineering*, August 2010, Vol. 132, 041009-1 to 10.
97. Satoh, G., Birnbaum, A., Yao, Y.L., "Annealing Effect on the Shape Memory Properties of Amorphous NiTi Thin Films," *ASME Trans. J. of Manufacturing Science and Engineering*, October 2010, Vol. 132, 051004-1 to 9.
98. Chen, Y., Zhang, J., Wang, H., Garty, G., Xu, Y., Lyulko, O.V., Turner, H.C., Randers-Pehrson, G., Simaan, N., Yao, Y.L. and Brenner, D.J. "Development of a Robotically-based Automated Biodosimetry Tool for High-throughput Radiological Triage," *International Journal of Biomechanics and Biomedical Robotics*, **1**(2), 2010, pp. 115-125.
99. Vukelić, S., Kongsuwan, P., Yao, Y. L., "Ultra-Fast Laser Induced Structural Modification of Fused Silica. Part I: Feature Formation Mechanisms," *ASME Trans. J. of Manufacturing Science and Engineering*, December 2010, Vol. 132, 061012-1 to 8.
100. Vukelić, S., Kongsuwan, P., Ryu, S., Yao, Y. L., "Ultra Fast Laser Induced Structural Modification of Fused Silica. Part II: Spatially Resolved and Decomposed Raman Spectral Analysis" *ASME Trans. J. of Manufacturing Science and Engineering*, December 2010, Vol. 132, 061013-1 to 9.
101. Turner, H.C., Brenner, D.J., Bertucci, A., Lyulko, O., Xu, Y., Schaefer, J., Chen, Y., Zhang, J., Wang, H., Simaan, N., Randers-Pehrson, G., Yao, Y.L., Zenhausern, F., and Garty, G., "Adaptation of the γ -H2AX assay for automated processing in human lymphocytes", *Radiation Research*, **175**, 2011, pp. 281-290.
102. Garty, G., Chen, Y., Turner, H., Zhang, J., Lyulko, O., Bertucci, A., Xu, Y., Wang, H, Simaan, N., Randers-Pehrson, G., Yao, Y.L., Brenner, D.J., "The RABIT: A Rapid Automated Biodosimetry Tool For Radiological Triage. II. Technological Developments,"

- International Journal of Radiation Biology*, Special Issue on the Centers for Medical Countermeasures against Radiation (CMCR), 2011, Early Online, pp.1-15.
103. Chen, Y., Wang, H., Zhang, J., Garty, G., Simaan, N., Yao, Y.L. and Brenner, D.J. "Automated Recognition of Robotic Manipulation Failures in High-Throughput Biodosimetry Tool," *Expert Systems with Applications*, 39 (2012), pp. 9602-9611.
 104. Wang, H., Lusquiños, F., Yao, Y.L., "Effect of hydrogen on surface texturing and crystallization of a-Si:H thin film irradiated by excimer laser," *Applied Physics A: Volume* 107, Issue 2 (2012), Page 307-320.
 105. Hsu, S.-T., Tan, H., Yao, Y.L., "Effect of Excimer Laser Irradiation on Crystallinity and Chemical Bounding of Biodegradable Polymer," *Polymer Degradation and Stability*, 97 (2012) pp. 88-97.
 106. Kongsuwan, P, Satoh, G., Yao, Y.L., "Transmission Welding of Glass by Femtosecond Laser: Mechanism and Fracture Strength," *ASME Trans. J. of Manufacturing Science and Engineering*, February 2012, Vol. 134, 011004-1 to 11.
 107. Satoh, G., Yao, Y.L., "Laser Blazing of Dissimilar Metal Medical Devices," *Industrial Laser Solutions for Manufacturing*, " May/June 2012, pp. 28-30.
 108. Wang, H., Kongsuwan, P, Satoh, G., Yao, Y.L., "Femtosecond Laser-induced Simultaneous Surface Texturing and Crystallization of a-Si:H Thin Film: Absorption and Crystallinity," *ASME Trans. J. of Manufacturing Science and Engineering*, June 2012, Vol. 134, 031006-1 to 10.
 109. Wang, H., Kongsuwan, P, Satoh, G., Yao, Y.L., "Femtosecond Laser-induced Simultaneous Surface Texturing and Crystallization of a-Si:H Thin Film: Morphology Study," *Int. Journal of Advanced Manufacturing Technology*, (2013) 65:1691-1703.
 110. Satoh, G., Huang, X., Ramirez, A.G., Yao, Y.L., "Characterization and Prediction of Texture in Laser Annealed NiTi Shape Memory Thin Films," *ASME Trans. J. of Manufacturing Science and Engineering*, October 2012, Vol. 134, 051006-1 to 11.
 111. Satoh, G., Yao, Y.L., Qiu, C., "Strength and Microstructure of Laser Fusion Welded Ti-SS Dissimilar Material Pair," *Int. Journal of Advanced Manufacturing Technology*, Volume 66, Issue 1 (2013), Page 469-479.
 112. Tan, H., Yao, Y.L., "Laser Joining of Continuous Glass Fiber Composite Pre-forms," *submitted to ASME Trans. J. of Manufacturing Science and Engineering*, Feb 2013, Vol 135, 011014-1 to 11.
 113. Kongsuwan, P., Wang, H., Yao, Y.L., "Single Step Channeling of Glass by Femtosecond Laser," *Journal of Applied Physics*, **112**, 023114 (2012) (10 pages).
 114. Hsu, S.-T., Yao, Y.L., "Effect of Film Formation Method and Annealing on Morphology and Crystal Structure of Poly(L-Lactic Acid) Films," *ASME Trans. J. of Manufacturing Science and Engineering*, Vol. 136, Issue 2, April 14, 2014, 021006-1 to 9, DOI: 10.1115/1.4025909.
 115. Wang, H., Hsu, S.-T., Tan, H., Yao, Y.L., Chen, H., Azer, M.N., "Predictive Modeling for Glass-Side Laser Scribing of Thin Film Photovoltaic Cells," *ASME Journal of Manufacturing Science and Engineering*, 135(5), 051004 (Sep 11 2013); doi: 10.1115/1.4024818.

- 116.Hsu, S.-T., Tan, H, and Yao, Y. L., 2014, “Effect of Laser Induced Crystallinity Modification on Biodegradation Profile of Poly(L-lactic Acid),” *Journal of Manufacturing Science and Engineering*, 136 (1), 011005 (February 2014); doi: 10.1115/1.4025394.
- 117.Hsu, S.-T. and Yao, Y. L., 2013, “Effect of Drug Loading on Laser Modified Polymer Biodegradation,” *Manufacturing Letters*, 1 (2013) 66-69.
- 118.Hsu, S.-T. and Yao, Y. L., 2013, “Effect of Drug Loading and Laser Surface Melting on Drug Release Profile from Biodegradable Polymer,” *Journal of Applied Polymer Science*, Vol. 130, Issue 6, from page 4147-4156.
- 119.Brandal, G., Satoh, G., Naveed, S., Yao, Y.L., “Beneficial Interface Geometry for Laser Joining of NiTi to Stainless Steel Wires,” *Journal of Manufacturing Science and Engineering*, 135(6), 061006 (Nov 05 2013); doi: 10.1115/1.4025495.
- 120.Tan, H., and Yao, Y. L., 2013, "Feasibility analysis of inter-laminar toughening for improving delamination resistance," *Manufacturing Letters*, 1, pp. 33-37.
- 121.Satoh, G., Qiu, C., Naveed, S., Yao, Y.L., “Strength and Phase Identification of Autogenous Laser Brazed Dissimilar Metal Micro-Joints,” *Journal of Manufacturing Science and Engineering*, 137(1), 011012, 2015; doi:10.1115/1.4028778.
- 122.Kongsuwan, P., Brandal, G., Yao, Y.L., “Laser Induced Porosity and Crystallinity Modification of a Bioactive Glass Coating on Titanium Substrates,” *ASME Trans. J. of Manufacturing Science and Engineering*, 137 (3), June 2015, 031004-1 to -12, DOI: 10.1115/1.4029566.
- 123.Brandal, G., Naveed, S., Yao, Y.L., “Biocompatibility and Corrosion Response of Laser Joined NiTi to Stainless Steel Wires,” *ASME Trans. J. of Manufacturing Science and Engineering*, 137(3), June 2015, 031015-1 to -9, DOI: 10.1115/1.4029766.
- 124.Bian, D., Satoh, G., Yao, Y.L., “Laser Inter-Laminar Reinforcement of Continuous Glass Fiber Composites,” *ASME Trans. J. of Manufacturing Science and Engineering*, 137(6), 2015, 061001, DOI: 10.1115/1.4030754.
- 125.Zhang, M., Chen, C., Brandal, G., Bian, D., Yao, Y.L., “ Experimental and Numerical Investigation of Laser Forming of Closed-Cell Aluminum Foam,” *ASME Trans. J. of Manufacturing Science and Engineering*, 138(2), 2016, 021006, DOI: 10.1115/1.4030511.
- 126.Wang, H., Chen, H., Yao, Y.L., “Removal Mechanism and Defect Characterization for Glass-Side Laser Scribing of CdTe/CdS Multilayer in Solar Cells,” *ASME Trans. J. of Manufacturing Science and Engineering*, 137(6), 2015. 061006, DOI: 10.1115/1.4030935.
- 127.Garty, G., Bigelow, A.W., Repin, M., Turner, H.C., Bian, D., Balajee, A.S., Lyulko, O.V., Taveras, M., Yao, Y.L., Brenner, D., “An Automated Imaging System for Radiation Biodosimetry,” *Microscopy Research & Technique*, 78:587-598 (2015), DOI 10.1002/jemt.22512.
- 128.Bian, D., Bucher, T., Shim, D.J., Jones, M., Yao, Y.L., “Effect of Deep Penetration of Interleaf on Delamination Resistance in GFRP,” *ASME Trans. J. of Manufacturing Science and Engineering*, in production.

129. Bian, D., Tsui, J., Repin, M., Garty, G., Turner, H., Yao, Y.L., Brenner, D.J., “Liquid Handling Optimization in High-Throughput Biodosimetry Tool,” *ASME Trans., J. of Medical Devices*, revised paper under review.
130. Satoh, G., Brandal, G., Naveed, S., Yao, Y.L., “Laser Autogenous Brazing of Biocompatible, Dissimilar Metals in Tubular Geometries,” *ASME Trans. J. of Manufacturing Science and Engineering*, under review.
131. Kolich, D., Yao, Y.L., Fafandjel, N., “Data Mining Methodology for Determining the Optimal Model of Cost Prediction in Interim Product Assembly,” *Int. Journal of Adv. Manufacturing Technology*, under review.
132. Chen, C., Yao, Y.L., Zhang, M., Kongsuwan, P., Brandal, G., Bian, D., “Effects of Laser Radiation on the Wetting and Diffusion Characteristics of Kovar Alloy on Borosilicate Glass,” *ASME Trans. J. of Manufacturing Science and Engineering*, under review.
133. G. Garty, H.C. Turner, A. Salerno, A. Bertucci, J. Zhang, Y. Chen, A. Dutta, P. Sharma, D. Bian, M. Taveras, H. Wang, A Bhatla, A. Balajee, M. Repin, O.V. Lyulko, N. Simaan, Y.L. Yao, D.J. Brenner, “The decade of the RABiT (2005-2015),” *Radiation Protection Dosimetry*, submitted.
134. Bucher, T., Bolger, C., Zhang, M., Chen, C.J., Yao, Y.L., “Effect of Geometrical Modeling on Prediction of Laser-Induced Heat Transfer in Metal Foam,” *ASME Trans. J. of Manufacturing Science and Engineering*, submitted.
135. Brandal, G., Yao, Y.L., “Material Influence on Mitigation of Stress Corrosion Cracking via Laser Shock Peening,” *ASME Trans. J. of Manufacturing Science and Engineering*, submitted.