

## David T. Shaw

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### PROFESSIONAL PREPARATION

<b>National Taiwan University</b>	Mechanical Engineering	<b>B.S. 1959</b>
<b>Purdue University</b>	Nuclear Engineering	<b>M.S. 1961</b>
<b>Purdue University</b>	Nuclear Engineering	<b>Ph.D.1964</b>

### APPOINTMENTS

**Director**, Materials Engineering Research Laboratories (1988 - present).

**Director**, Center for Innovation in Engineering Learning (1999-present).

**Professor**, Dept. of Electrical Engineering, SUNY/Buffalo (1974 – present)

**Associate Professor**, Dept. of Electrical Engineering, SUNY/Buffalo (67-74)

**Assistant Professor**, Dept. of Electrical Engineering, SUNY/Buffalo (64 –67)

**Visiting Associate**, California Institute of Technology (71-72)

**Visiting Scientist**, Centre L'Etudes Nucleaires de Fontenay-aux-Roses,Cadarache, France (74)

**Visiting Professor**, University of Paris, France (74-75)

**Visiting Professor**, University of Marseille France (74-75).

### HONORS AND AWARDS

1. International Aerosol Fellows Award, [International Aerosol Research Assembly](#) (1994).
2. Association Award - [American Association for Aerosol Research](#) (1986).
3. Outstanding Achievement Award of the [Chinese-American Engineers and Scientists Association of Southern California](#) (2001)
4. [Distinguished Achievement Award of the Chinese Institute of Engineers/USA](#) (2003)
5. Listed in [Who's Who in America](#)

### PROFESSIONAL ACTIVITIES

- (1) **Co Editor-in-Chief** (with Benjamin Y.H. Liu), Handbook of Micro and Nanoparticles, Scheduled for publication June, 2007 ([Springer Publishing](#))
- (2) **Distinguished Seminar Series**, School of Microelectronics and Solid State Electronics, University of Electronic Science and Technology of China, Chengdu, China (2005-06)
- (3) **Founding President**, [American Association for Aerosol Research](#) (83-86)
- (4) **Founding Editor-in-Chief**, [Journal of Aerosol Science and Technology](#) (83-92)
- (5) **Americas Editor**, [Journal of Nanoparticle Research](#) ( 2001- Present)
- (6) **Co Chairman**, US/Japan Workshop on High Temperature Superconductivity ( 1991-2003)
- (7) **Appointed Member**, NSF Panel on [Nanoscience and Nanotechnology](#) (1998-2000) (Chairman:Mihail Roco)
- (8) **Invited Member, and session chair** on nanomaterials, the Chinese Institute of Engineers ([CIE-USA](#)) delegation to Beijing, China for the Sino-American Technology and Engineering Conference (SATEC) on nanomaterials ([SATEC 04](#))

- (9) **Invited Member, and session chair on Nanotechnology**, Chinese Institute of Engineers ([CIE-USA](#)) delegation to Taipei, Taiwan for the Modern Engineering and Technology Seminar ([METS 04](#))
- (10) **Member, [IEEE](#)** subcommittee on K-12 technology education (1999-2002)

### **RESEARCH INTERESTS**

Control technology for nanoparticles, generation and characterization of nano and micron particles, hydrogen storage of hydrogen in carbon nanotubes, high temperature superconductivity, microelectromechanical systems, web-based technology education.

### **RESEARCH MENTORING AND SYNERGISTIC ACTIVITIES**

1. During his career, advised 16 postdocs (2 F, 1 U), and 31 Ph.D. graduates (3F, 1U) (F =Female, U = Under-represented Groups)
2. Organized the Center for Innovation in Engineering Learning for the development of web-based instructional materials for high school students ([NSF sponsored](#))
3. Appointed to Honorary Professorships at [Sun Yat Sen University](#) (Guangzhou, China) and the [Shenyang Metal Research Institute](#) of the Chinese Academy of Sciences.
4. Member, U.S. Delegation International Superconductivity International Superconductivity Industry Summit ([ISIS](#)) (1993-1996).
5. Member, delegation to the [Overseas Chinese Environmental Engineers & Scientists Association \(OCEESA\)](#)/Taiwan EPA Meeting on Air Pollution Legislations (organized by Dr. Jentai Yang 1996)
6. Co-chair (with Dr. Jentai Yang), [OCEESA](#)/Taiwan EPA Symposium on Air Pollution Control and Legislation (1997)
7. Chair, Task Force on New York State Maglev Research and Development, (1992 - 1993).
8. Member, NSF Review Panel, Presidential Faculty Fellow Program, (1992 - 1996).
9. Member, National Industrial Working Ad hoc Group on Superconducting Power Applications, (1991-1997).
10. Member, Superconductivity Coordination Council for Electric Power (SC<sup>3</sup>EP), EPRI, DOE, (1989 - 1996).
11. Member, Blue Ribbon Advisory Committee on Laser Obscuration Science of CRDEC, Department of Army, (1988 - 1990).
12. International Aerosol Congress Member, Conference Committee (1984 - 1988).
13. Committee of U.S. Army Basic Research Member, (1985-1988).
14. EPRI Peer Review Committee Member, (1983 - 1988).
15. National Science Foundation Workshops on Research Needs in Submicron Particles Chairman, 1982, Co-chairman, (1983, 1984).
16. U. S. Environmental Protection Agency, Member, Peer Review Program (1982 - 1987).
17. Appointed member of the U.S. delegation on Nuclear Aerosol to the International Atomic Energy Agency ([IAEA](#)) in Paris (1985)
18. Appointed member of the U.S. delegation to the former Soviet Union on energy conversion (1982)

### **BOOKS EDITED:**

Co Editor-in-Chief (with Benjamin Y.H. Liu), Handbook on Micro and Nanoparticles, Springer Publishing (2007)

Associate Editor, Handbook on Superconducting Materials, Institute of Physics Publishing (1999).  
Co-Editor, MRS Symposium Proceedings, Vol. 275, MRS, Pittsburgh, PA., (1992).  
Co-Editor, Superconductivity and Its Applications, Plenum Publishing, NY, (1990).  
Editor, Superconductivity and Its Applications, Elsevier, NY, (1989).  
Editor, Fundamentals of Aerosol Science, published by John Wiley & Sons, New York, April 1978.  
Editor, Recent Developments in Aerosol Science, published by John Wiley & Sons, New York, November 1978.  
Editor, Assessment of Airborne Radioactivity, American Nuclear Society Proceedings Series, May 1978.

**PATENTS:** 8 Patents granted.

### **PUBLICATIONS (REFEREED JOURNALS)**

Dr. Shaw's research interests are focused mainly on the study of nanometer-size particles and their applications, including their growth mechanisms, superconductive properties, and dispersion of aerosols. He has published over 230 refereed journal articles and edited numerous monographs, handbooks and conference proceedings.

**231** "Nanomaterials and Environmental Quality: Issues and Opportunities", Invited review paper, Inaugural issue of the International Journal of Environment and Waste Management ([IJEWM](#)) (2006)

**230**. "Control Technology for Nanoparticles" D. T. Shaw, to appear, Journal of Nanoparticle Research (2006)

**229**. "*Nanostructure Science and Technology*", R. W. Siegel, E. L. Hu, D. M. Cox, H. Goronkin, C. C. Koch, J. Mendel, M. C. Roco, and **D. T. Shaw** *R&D Status and Trends in Nanoparticles, Nanostructure Materials, and Devices* (1999).

**228**. "Introduction to High Temperature Superconductors", D. T. Shaw, *Handbook of Superconducting Materials, Vol I: Superconductivity, Materials and Processes*, Edited by D. A. Cardwell and D. S. Ginley, Institute of Physics Publications, 891-892, 2003

**227**. "Introduction to Emerging Materials", D. T. Shaw, *Handbook of Superconducting Materials, Vol I: Superconductivity, Materials and Processes*, Edited by D. A. Cardwell and D. S. Ginley, Institute of Physics Publications, 1901-1902, 2003

**226**. "Hydrogen Storage in Carbon Nitride Nanobells, X. D. Bai, Dingyong Zhong, G. Y. Zhang, X. C. Ma, Shuang Liu and E. G. Wang, E. G. Wang, Y. Chen and David T. Shaw, *App. Phys. Lett.*, 79, (10) 1552 (2001).

**225**. "Hydrogen Storage in Aligned Carbon Nanotubes, Y. Chen, D. T. Shaw, X. D. Bai, E. G. Wang, C. Lund, W. M. Lu and D. D. L. Chung, *App. Phys. Lett.*, 78, (15) 2128 (2001).

**224**. "Aligned Conical Carbon Nanotubes", Y. Chen, L. Guo, S. Patel and D. T. Shaw, *J. Mater. Science*, 35 (21) 5517 (2000).

**223**. "Field Emission of Different Oriented Carbon Nanotubes", Y. Chen, D. T. Shaw and L. Guo, *Appl. Phys. Lett.*, 76, (17) 2469 (2000).

**222**. "High-Density Silicon and Silicon Nitride Cones", Y. Chen, L. Guo and D. T. Shaw, *J. of Crystal Growth*, 210, 527 (2000).

- 221.** "Synthesis and Assembly", E. L. Hu and D. T. Shaw, WTEC Panel Report on Nanostructure Science and Technology, R&D Status and Trends in Nanoparticles, Nanostructured Materials, and Devices, Chpt. 2, 15-34, December 1998.
- 220.** "Field Emission from Aligned High-Density Graphitic Nanofibers", Y. Chen, S. Patel, J. Ye, D. T. Shaw, and L. Guo, *Appl. Phys. Lett.*, 73 (15) 2119 (1998).
- 219.** "Carbon Nanotubes for Field Emission, Tribology and Magnetic Separation Applications", S. Patel, J. Ye, T. Haugan and D. T. Shaw, Proceedings of the Joint NSF/NIST, Conference on Nanoparticles: Synthesis, Processing into Functional Nanostructures, and Characterization, May 12-13, 112-120 (1997).
- 218.** "Enhancement of Superconducting Properties of Bi-Based Oxide High  $T_c$  Thick Films Using Nanosized Crystals as Flux-Pinning Centers", Proceedings of the Third International Conference on Nanostructured Materials, Kona, Hawaii, July 8-12, 1996, *Nanostructured Materials*, eds., M. L. Trudeau, V. Provenzano, R. D. Schull, J. Y. Ying, 9, 599-602, 1997.
- 217.** New Research Opportunities in Superconductivity IV, B. J. Batlogg, R. Buhrman, J. R. Clem, D. Gubser, D. Larbalestier, D. Liebenbert, J. Rowell, R. Schwall, D. T. Shaw, and A. W. Sleight, *J. Superconductivity*, 10 (6), 583 (1997).
- 216.** "Processing Issues of Bi-2212 Wires," T. Haugan, S. Patel, and D. T. Shaw, *Chinese Journal of Physics*, Vol. 34, 2-II, 215-222, April 1996.
- 215.** "Development of High  $T_c$  Superconducting Wires for Applications at 20 K," T. Haugan, F. Wong, J. Ye, S. Patel, D. T. Shaw, and L. Motowidlo, Proceedings of the 10th Anniv. HTS Workshop on Physics, Materials, and Applications, Houston, TX, March 12-16, 1996.
- 214.** "Isothermal Melt Processing of PIT Bi-2212 Tapes," J. Ye, S. Patel, and D. T. Shaw, Proceedings of the Seventh US-Japan Workshop on High  $T_c$  Superconductors, pg. 29-33, Oct. 24-25, 1995.
- 213.** "Enhancement in the Overall Critical Density of Ag-Sheathed Bi-2212 Tapes by Chemical Etching," S. Patel, S. Chen, F. Wong, J. Ye, T. Haugan and D. T. Shaw, International Workshop on Superconductivity, co-sponsored by ISTEC and MRS, Hawaii, p. 266-269, June 18-21, 1995.
- 212.** "Alternating Current Losses in  $\text{Bi}_2\text{Sr}_2\text{Ca}_1\text{Cu}_2\text{O}_{8+\delta}/\text{Ag}$  Tapes at Power Frequencies," M. Pitsakis, T. Haugan, F. C. H. Wong, S. Patel, and D. T. Shaw, *Appl. Phys. Lett.*, 67 (12) 1995.
- 211.** "In-Plane Texturing and its Effect on Critical Current Densities of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  Thin Films Grown on Polycrystalline Substrates," F. Yang, E. Narumi, S. Patel, D. T. Shaw, *Physica C*, 244, 299-304 (1995).
- 210.** "Deformation of Silver-Sheathed Oxide Superconducting Tapes by Trapped Gases," S. Patel, T. Haugan and D. T. Shaw, *Cryogenics*, 34, 12, 1031-1037 (1994).
- 209.** "Recent Status on High Temperature Superconducting  $\text{Bi}_2\text{Sr}_2\text{CaCuO}_{8+x}$  Wire Development at NYSIS: 1-90 Meter Length  $J_c$ 's and 3 Meter Diameter Ring Furnace Design," T. Haugan, S. Patel, M. Pitsakis, F. Wong, S. J. Chen and D. T. Shaw, *J. Elec. Mat.*, 24, 12, 1811-1815, 1995.
- 208.** "Pinhole Defects in the Ag Sheath of PIT Bi-2212 Tapes," T. Haugan, S. Chen, S. Patel, F. Wong, P. Bush and D. T. Shaw, *Cryogenics*, 35, 853-859 (1995).
- 207.** "A Study of Bubble Defect Formations in Ag-Sheathed  $\text{Bi}_2\text{Sr}_2\text{CaCuO}_{8+x}$  (Bi-2212) Superconducting Tapes" T. Haugan, S. Patel and D. T. Shaw, *Physica C*, 266, 183-190 (1996).

- 206.** "The Measurement of Effective Young's modulus of Ag-sheathed Bi-2212 Tapes Using a Cantilevered Large Deflection Method," S. Patel, S. Chen, F. Wong, T. Haugan and D. T. Shaw, *Cryogenics* (1995).
- 205.** "Persistent Current Density and Flux Creep in Bi-Sr-Ca-Cu-O/Ag Tapes with Splayed Columnar Defects from 0.8 GeV Proton Irradiation," J. R. Thompson, L. Krushin-Elbaum, Y. C. Kim, D. K. Christen, A. D. Marwick, R. Wheeler, C. Li, S. Patel, D. T. Shaw, P. Lisowski, and J. Ullmann, submitted IEEE Transactions on Applied Superconductivity, Oct. 1994.
- 204.** "Effect of Bending on the  $J_c$ - $\epsilon$  Characteristic of a Silver-Sheathed Oxide Superconducting Tape with Sausaging," S. Patel, S. Chen, T. Haugan, F. Wong, and D. T. Shaw, *Cryogenics*, 35,4, 257-262 (1995).
- 203.** "Effect of Nonuniform Core Thickness on the Critical Current Density of Silver-Sheathed Oxide Superconducting Tapes," S. Patel, T. Haugan, F. Wong, S. S. Li, J. Ye and D. T. Shaw, *Cryogenics*, 35, 249-256 (1995).
- 202.** "In-Situ Dynamic Measurement of Polydisperse Chain Aggregate Aerosols Using Photocorrelation Spectroscopy Technique," G. W. Xie, S. Patel, F. C. H. Wong and D. T. Shaw, *J. Aerosol Sci.*, 22, 219-235 (1995).
- 201.** "Effect of Magnetic Particle Chain Formation on the Entropy Changes in Superparamagnetic Nanocomposite Systems", D. Y. Chen, S. Patel and D. T. Shaw, *J. Magn. Magn. Mat'ls.*, 134, 75-78 (1994).
- 200.** "Double Exposure Holography for Fast Moving Fibers with Submicron Diameter", to appear, *Applied Optics*.
- 199.** "Transport Properties of Powder-In-Tube BSCCO (2212)/Ag Tape Joints," S. J. Chen, T. Haugan, S. Patel, and D. T. Shaw, Proc. Of the 7th Conf. on Superconductivity and Applications, ed. by M. J. Naughton, *Appl. Superconductivity*, Vol. 3, pp., 15-19, (1995).
- 198.** "Fabrication of 90-Meter Length  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  Ag-Sheathed Superconducting Tapes," T. Haugan, M. Pitsakis, J. Ye, F. Wong, S. Patel and D. T. Shaw, Proc. of the 7th Conf. on Superconductivity and Applications, ed. by M. J. Naughton, *Appl. Superconductivity*, Vol. 3, pp.,85-90, (1995).
- 197.** "Control of In-Plane Alignment and the Critical Current of Polycrystalline  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  Thin Films," F. Yang, E. Narumi, S. Patel and D. T. Shaw, Proc. of the 7th Conf. on Superconductivity and Applications, ed. by M. J. Naughton, *Appl. Superconductivity*, Vol. 3, pp. 105-111, (1995).
- 196.** "Fabrication of Pancake Coil Magnets from One to Ten Meter Length Powder-in-Tube  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ /Ag Tapes", T. Haugan, M. Pitsakis, S. S. Li, S. Patel and D. T. Shaw, to appear in Processing and Properties of Long Length Superconductors, ed. by U. Balachandran, E. Collings and A. Goyal, Proc. of the TMS Conf. Pittsburgh, PA, 91-100, (1994).
- 195.** "Deformation of Silver-Sheathed Oxide Superconducting Tapes by Trapped Gases," S. Patel, T. Haugan and D. T. Shaw, *Cryogenics* 34, 12, 1031-1037 (1994).
- 194.** "Predictive Model for Critical Current Density of Ag-sheathed  $\text{Bi}_2\text{Sr}_2\text{Ca}_1\text{Cu}_2\text{O}_8$  Composite Tapes with Fabrication Defects," S. Patel, T. Haugan, S. Chen, F. Wong, E. Narumi and D. T. Shaw, *Cryogenics*, 34, 6, 537-542 (1994).
- 193.** "Enhancement of Persistent Currents in Bi-2212 Tapes with Splayed Columnar Defects Induced with 0.8 GeV Protons," L. Krushin-Elbaum, J. R. Thompson, R. Wheeler, A. D. Marwick, C. Li, S. Patel, D. T. Shaw, P. Lisowski and J. Ullmann, *Appl. Phys. Lett.*, 64, (24) 3331-3333 (1994).

- 192.** "In-Line Holography of Ultrafine Chain Aggregate Fiber", S. Patel, G. W. Xie, L. F. Hua, F. Wong and D. T. Shaw, *Optical Engineering*, 33, 1, 204-208 (1994).
- 191.** "Fabrication of Silver-Sheathed Bi-2212 Tapes," S. Patel, T. Haugan, S. S. Li and D. T. Shaw, Proceedings of the Sixth US-Japan Workshop on High  $T_c$  Superconductors, Editors K. Salama, C. W. Chu, and W. K. Chu, Dec 1993.
- 190.** "BSCCO-2212 thick films on a flexible YSZ substrate," S.-J. Chen, S. Patel, E. Narumi, D. T. Shaw, D. St. Julien and T. D. Ketcham, *Physica C*, 218, 191-196 (1993).
- 189.** "Processing of Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>x</sub> Thick Films from Nitrate Precursors," C. Li, S. Patel, J. Ye, E. Narumi, D. T. Shaw, and T. Sato, *Appl. Phys. Lett.*, 63, (18), 2558-2560 (1993).
- 188.** "Processing Issues of High  $T_c$  Conductors", D. T. Shaw, *Chinese Journal of Physics*, 31, 6, 913-922 (1993).
- 187.** "Ceramic Processing and Wire Fabrication of High- $T_c$  Superconductors," D. T. Shaw and S. Jin, Chapter 3 in the book Processing and Properties of High- $T_c$  Superconductors, Volume I. Bulk Materials, ed. by S. Jin, World Scientific, 87-120, (1993).
- 186.** "The Making of High- $T_c$  Layered Superconductors -- From Atomic Layer-by-Layer Film Growth to a Jelly-Roll Process for Bulk Conductors," C. C. Tsuei, T. Frey, C. C. Chi, T. Shaw, D. T. Shaw, and M. K. Wu, AIP Conference Proceedings 273, *Superconductivity and Its Applications*, ed. By H. S. Kwok, M. J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 12-23, (1993).
- 185.** "Superconducting Behavior of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6.8</sub>/Bi<sub>2</sub>Sr<sub>2</sub>Ca<sub>n</sub>Cu<sub>n+1</sub> Multilayers," E. Narumi, J. Lee, S. Patel and D. T. Shaw, AIP Conference Proceedings 273, *Superconductivity and Its Applications*, ed. by H. S. Kwok, M. J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 155-161, (1993).
- 184.** "Laser Ablation of YBCO Films in Oxygen and Ozone Atmospheres," C. Li, E. Narumi, L. P. Fu, A. Petrou, S. Patel, D. T. Shaw and S. Hosokawa, AIP Conference Proceedings 273, *Superconductivity and Its Applications*, ed. by H. S. Kwok, M. J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 162-167, (1993).
- 183.** "Thermally Activated Flux Flow in Y<sub>1</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7-y</sub> Superconducting Multilayer Thin Films," S. Y. Lee, E. Narumi and D. T. Shaw, AIP Conference Proceedings 273, *Superconductivity and Its Applications*, ed. By H. S. Kwok, M. J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 231-235, (1993).
- 182.** "Development of Bismuth-2212 Conductors," S. Patel, T. Haugan, J. Ye, S. Chen, S. S. Li, A. Shah, C. Li, A. Ardounis, F. Wong, M. Pitsakis, E. Narumi and D. T. Shaw, AIP Conference Proceedings 273, *Superconductivity and Its Applications*, ed. by H. S. Kwok, M. J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 567-574, (1993).
- 181.** "Growth of Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>x</sub>/Ag Single Layer and Multilayer Superconducting Tape Systems," T. Haugan, J. Ye, S. Chen, S. S. Li, S. Patel and D. T. Shaw, AIP Conference Proceedings 273, *Superconductivity and Its Applications*, ed. by H. S. Kwok, M. J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 609-615, (1993).
- 180.** "Nanophase Composites for Magnetic Refrigeration," D.Y. Chen, S. Patel, and D.T. Shaw, AIP Conference Proceedings 273, ed. by H. S. Kwok, M.J. Naughton, and D. T. Shaw, American Institute of Physics, New York, 651-654, (1993).
- 179.** "Advances in Particulate Emission Control", S. Patel and D. T. Shaw, *Proc. of The International Conference on Aerosol Science and Technology*, held Oct. 28-30 1993, Taichung, Taiwan, ROC, 55-61 (1993).

- 178.** "In-Situ, RF Plasma Deposition of Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>3</sub>O<sub>x</sub> Thin Films at Atmospheric Pressure," A. Shah, S. Patel, E. Narumi, and D. T. Shaw, *Appl. Phys. Lett.*, 62, 19, 2422-2424 (1993).
- 177.** "RF Plasma Deposition and In-Situ Property Enhancement of Bi<sub>2</sub>Sr<sub>2</sub>Ca<sub>n-1</sub>Cu<sub>n</sub>O<sub>x</sub> Thin Films," A. Shah, S. Patel, E. Narumi, and D. T. Shaw, *Physica C*, 58, 211 (1993).
- 176.** "Flux Pinning in Artificial Layered Oxide Superconductors", D. T. Shaw, *J. Advanced Science*, 4, 1, 64-68 (1992).
- 175.** "Processing Issues of High T<sub>c</sub> Conductors, D. T. Shaw, *Proc. of The Fifth U.S.-Japan Workshop on High T<sub>c</sub> Superconductors*, Tsukuba, Japan, Ed. K. Tachikawa, 105-109 (1992).
- 174.** "Effect of Oxygen Pressure on Properties of Bi-Sr-Ca-Cu-O Thin Films Grown by Laser Deposition," J. Lee, E. Narumi, C. Li, S. Patel and D. T. Shaw, *Physica C*, 200, 235-241 (1992).
- 173.** "Controlled Growth of High-Temperature Superconducting Thin Films on Polycrystalline Substrates," D. T. Shaw, *Applications of High T<sub>c</sub> Superconductivity*, MRS Bulletin, Vol. XVII, 8, 39-44 (1992).
- 172.** "Superconducting Behavior of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6.8</sub>/Bi<sub>2</sub>Sr<sub>2</sub>Ca<sub>n</sub>Cu<sub>n+1</sub>O<sub>x</sub> Multilayers," E. Narumi, J. Lee, C. Li, S. Patel, and D. T. Shaw, *MRS Symp. Proc.*, Vol. 275, 377-382 (1992).
- 171.** "Degradation and Recovery of Transport Properties of Strained HTS Conductors," S. Patel, J. Ye, T. Haugan, S. Chen, S. S. Li, F. Wong, D. T. Shaw, and C. C. Tsuei, *MRS Symp. Proc.*, Vol. 275, 621-626 (1992).
- 170.** "Superconducting YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> Thin Films on GaAs Substrates Using a Double Buffer Layer Structure," Q. X. Jia, S. Y. Lee, W. A. Anderson, and D. T. Shaw, AIP Conference Proceedings 251, *Superconductivity and Its Applications*, ed. by H. S. Kwok, Y. H. Kao and A. Kaloyeros, American Institute of Physics, New York, 84-88 (1992).
- 169.** "Properties of Critical Current Density in Heterostructures of Y<sub>1</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7-y</sub>/Y<sub>1</sub>Ba<sub>2</sub>Cu<sub>1-x</sub>Ni<sub>x</sub>)<sub>3</sub>O<sub>7-y</sub>," S. Y. Lee, E. Narumi and D. T. Shaw, AIP Conference Proceedings 251, *Superconductivity and Its Applications*, ed. by H. S. Kwok, Y. H. Kao and A. Kaloyeros, American Institute of Physics, New York, 108-122 (1992).
- 168.** "Computer Simulation of Thin Film Growth with Thermal Hopping of Atoms," J. Schutkeker, L. Chen, F. Wong, S. Patel, and D. T. Shaw, AIP Conference Proceedings 251, *Superconductivity and Its Applications*, ed. by H. S. Kwok, Y. H. Kao and A. Kaloyeros, American Institute of Physics, New York, 123-135 (1992).
- 167.** "Degradation Mechanisms of High Deposition Rate Y<sub>1</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> Thin Film Properties," A. Shah, R. Barone, S. Patel and D. T. Shaw, AIP Conference Proceedings 251, *Superconductivity and Its Applications*, ed. by H. S. Kwok, Y. H. Kao and A. Kaloyeros, American Institute of Physics, New York, 136-145 (1992).
- 166.** "Optimization Studies of High Critical Current Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>x</sub> Superconducting Tape Studies," T. Haugan, J. Ye, M. Pitsakis, S. Patel and D. T. Shaw, AIP Conference Proceedings 251, *Superconductivity and Its Applications*, ed. by H. S. Kwok, Y. H. Kao and A. Kaloyeros, American Institute of Physics, New York, 408-417 (1992).
- 165.** "A Jelly-Roll Process for High Temperature Superconducting Tapes and Wires," C. C. Tsuei, C. C. Chi, T. Frey, D. B. Mitzi, T. Kazyaka, T. Haugan, J. Ye, S. Patel, D. T. Shaw, and M. K. Wu, *Mat'l. Chem. and Phys.*, 32, 95-98 (1992).
- 164.** "Critical Current and Microstructure of Uniaxially Aligned Polycrystalline YBCO", J. E. Tkaczyk, C. L. Briant, J. A. DeLuca, E. L. Hall, P. L. Karas, K. W. Lay, E. Narumi and D. T. Shaw, *J. Mater. Res.*, 7, 6, 1317-1327 (1992).

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