

Paranthaman, M. Parans, Ph.D. * Oak Ridge National Laboratory

Group Leader and Distinguished Scientist/UT-Battelle Distinguished Inventor/
Professor, Bredesen Center Joint Faculty, The University of Tennessee, Knoxville

Education/Training

<u>Institution and Location</u>	<u>Degree</u>	<u>Year(s)</u>	<u>Field of Study</u>
Madurai Kamaraj University, Madurai, India	B.Sc.	1980	Chemistry
Madurai Kamaraj University, Madurai, India	M.Sc.	1982	Chemistry
Indian Institute of Technology, Madras	Ph.D.	1988	Chemistry/Materials Science

Research and Professional Experience

2010-Present: Professor, The University of Tennessee, Knoxville, Bredesen Center for Interdisciplinary Research and Graduate Education Faculty

2006-Present: Distinguished Research Staff and Group Leader, Materials Chemistry Group, Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

1999-2005: Senior Research Staff, Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

1993-1999: Research Staff, Chemistry Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

1991-1993: Research Associate, Superconductivity Laboratories, Department of Physics, University of Colorado, Boulder (worked with **Professor Allen M. Hermann**)

1988-1991: Post-doctoral Fellow, Center for Materials Science and Engineering, The University of Texas at Austin (worked with **Professor John B. Goodenough**)

1982-1988: Research Fellow, Materials Science Research Center, Indian Institute of Technology, Madras, India (Ph.D. Thesis Advisor: **Professor G. V. Subba Rao**)

Editorial Boards – Journals

Associate Editor, Journal of the American Ceramic Society (2004-Present)

Key Reader: Metallurgical and Materials Transactions E: Materials for Energy Systems (2014-Present)

Editorial Board, The Open Applied Physics Journal (2008-Present)

Editorial Board, Advances in Materials Research (2011-Present)

International Editorial Board, European Superconductivity News Forum (2012-Present)

Editorial Board, Superconductor Science and Technology (2003-2009)

Guest Editor, Special Issue on "Superconducting Wires and Tapes," Journal of Electronic Materials, October 2007

Guest Editor, Special Issue on "High performance YBCO coated conductors," MRS Bulletin, August 2004

Technical Editor, Materials Branch, IEEE Trans. on Applied Superconductivity, Applied Superconductivity Conference, Chicago, Illinois, August 2008

Technical Editor, Materials Branch, IEEE Trans. on Applied Superconductivity, Applied Superconductivity

Paranthaman's Resume (October 2015)

Conference, Seattle, Washington, August 2006
Technical Editor, Materials, IEEE Trans. on Applied Superconductivity, Applied Superconductivity
Conference, Jacksonville, Florida, October 2004
Technical Editor, Materials Branch, IEEE Trans. on Applied Superconductivity, Applied Superconductivity
Conference, Houston, Texas, August 2002

Editor – Books

Co-Editor, Book on “Semiconductor Materials for Solar Photovoltaic Cells”, Springer, 2015
Co-Editor, Book on “Advances in Materials Science for Environmental and Energy Technologies II”, Ceramic
Transactions, Volume 241, John Wiley & Sons, Inc., 2013
Co-Editor, Book on “*High Temperature Superconductors*,” Wiley-VCH, 2010
Co-Editor, Book on “*Flux Pinning and AC Loss Studies on YBCO Coated Conductors*,” Nova Science
Publishers, 2007
Co-Editor, Book on “High-Temperature Superconductor Materials, Devices, and Applications”,
Ceramic Transactions, Volume 160, The American Ceramic Society, Ohio, 2004
Co-Editor, Book on “Materials for High-Temperature Superconductor Technologies”, Materials Research Society,
2002

Professional Activities

- Fellow: The American Ceramic Society (2015)
- Fellow: ASM International, The Materials Information Society (2014)
- Fellow: Institute of Physics, London, UK (2004)
- Member: American Association for the Advancement of Science (AAAS), 2004-present
- Member: Materials Research Society, 1993-present
- Member: American Chemical Society, 2009-present
- Member: Electrochemical Society, 2009-present
- Member: American Physical Society, 2013-present

Conferences/Workshops Organized

- Organizer, Symposium on Lithium-Ion and Sodium-Ion Batteries, 2016 MRS Spring Meeting, Phoenix, Arizona, March 28-April 1, 2016.
- Technical Chair, DOE Workshop on MATERIALS INNOVATION FOR NEXT GENERATION T&D GRID COMPONENTS, Oak Ridge, TN, August 26-27, 2015
- Co-organized a symposium based on Energy Conversion – Photovoltaic, Concentrating Solar Power, and Thermoelectrics in the Materials Science and Technology Conference in Pittsburgh, PA, October 8-12, 2012.
- Co-organized the High Temperature Superconductivity symposium in the Materials Science and Technology Conference in Houston, Texas, October 17-21, 2010.
- Organizer, Perovskite Oxides: Films, Nanostructures, Properties, and Applications Symposium For the Material Science & Technology 2008 (MS&T'08) Conference and Exposition, October 5-9, 2008, in Pittsburgh, Pennsylvania.
- Organizer, High Temperature Superconductivity symposium for the Material Science & Technology 2007 (MS&T'07) Conference and Exposition, September 16-20, 2007 in Detroit, Michigan.
- Organizer, High Temperature Superconductor Wires & Tapes symposium for the Material Science & Technology 2006 (MS&T'06) Conference and Exposition, October 15-18, 2006 in Cincinnati, Ohio.
- Organizer, High temperature superconductor materials, devices and applications symposium in 106th Annual Meeting & Exposition of the American Ceramic Society, April 2004.
- Organizer, High temperature superconductivity symposium in 2001 Fall MRS meeting, December 2001, Boston, MA

Paranthaman's Resume (October 2015)

- Co-organizer, International Workshop on Coated Conductors for Applications, Italy, September 2003
- Chair, MRS International Workshop on Superconductors and Applications in Gatlinburg, Tennessee, August 2002
- Chair, 2007 DOE Wire Development Workshop in Panama City, Florida, January 2007
- Chair, 2005 DOE Wire Development Workshop in St. Petersburg, Florida, January 2005
- Chair, 2003 DOE Wire Development Workshop in St. Petersburg, Florida, January 2003

Review Panels

- Reviewed several Advanced Light Source User Proposals, Lawrence Berkeley National Laboratory, CA, 2013-present
- Reviewed several DOE SBIR and BES Early Career Proposals, 2009-present
- Reviewed Hundreds of Journal Articles that were published in several international journals
- Member by invitation on the panel of judges for Department of Energy's university project, and Industry peer reviews, 1999, 2000, 2004
- Member by invitation on the panel of reviewers for various DOE SBIR-STTR, Air Force, and DARPA Programs, 1996-present

Awards and Honors

2015 **R&D100 Award Finalist:** Multifunctional Superhydrophobic Transparent Glass Coating. Finalist in two Categories (Mechanical Devices/Materials and Market Disruptor Product).

2015 **Fellow** of the American Ceramic Society

2014 **Fellow** of the ASM International

2014 ORNL **Technology Commercialization** Award

2014 The American Ceramic Society: Ceramographic Competition Award: First Place: Scanning Probe Microscopy Category

2014 Parans Paranthaman's journal article was featured on Superconductor Science and Technology journal Cover page during February 2014; Volume 27; 022002 (6pp).

2013 Parans has contributed a book chapter in InTech's book on "Applications of High-Tc Superconductivity" that has been accessed/downloaded more than 3000 times.

2012 Fourth **R&D 100** Award related GaN Based Power Electronics

2011 ORNL Partnership Award

2011 FLC National Award: Excellence in Technology Transfer

2010 FLC Southeast Regional Award: Excellence in Technology Transfer Award

2010 Third **R&D 100** Award for developing "High Performance, High-Tc Superconducting Wires enabled via Self-assembly of Non-superconducting Columnar Defects"

2010 Co-authored top cited Physica C article in the last 5 years (2005-2010)

2009 **Ranks # 2 in worldwide citations in the HTS research during the last decade** (1999-2009)

2008 Second National FLC Award for Excellence in Technology Transfer.

2008 Co-authored three highly cited papers in the area of superconductivity since 2003 in PRL, PRB, JAP, APL, And SuST journals

2009 Ranks # 2 in worldwide citations in the HTS research during the last decade (1999-2009)

2008 **National FLC Award** for Excellence in Technology Transfer.

2008 ORNL Key Contributor Award Recipient

2007 Second **R&D 100** Award for 2007 for Developing High-performance LMO-enabled High-Temperature Superconducting Tape

2007 FLC Southeast Regional Award; Excellence in Technology Transfer Award for developing High-performance LaMnO₃ Enabled, High-Temperature Superconducting Tape

2007 DOE Excellent Mentor Award

2007 DOE Superconductivity Program Annual Peer Review, "Received top ranking with unprecedented high

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score of 98.4 out of 100 points" – ORNL-SuperPower CRADA
2007 R&D Significant Technical Accomplishment Award, Oak Ridge National Laboratory
2007 Patent Royalty Award for patents issued and licensed
2006 **Nova 50 Award** for Technical Accomplishments
2006 Excellent Team Award for Technology Transfer to Industries, Awards Night, ORNL
2006 DOE Excellent Mentor Award
2005 Patent Royalty Award for patents issued and licensed
2005 Authored highly cited paper in Appl. Phys. Lett. Since 2000
2005 DOE Excellent Mentor Award
2004 **Fellow** of the Institute of Physics, London, UK
2004 Patent Royalty Award for patents licensed
2003 Selected as one of 11 "**Distinguished Inventors**" at Oak Ridge National Laboratory by the Battelle Memorial Institute, Columbus, Ohio
2003 DOE Superconductivity Program Annual Review, "**Exceptional Accomplishment Award**" – ORNL-AMSC CRADA: Development of 2G YBCO RABiTS Wires.
2000 Patent Royalty Awards for patents and technology transfer
2003 Authored two highly cited papers in Physica C journal since 1995
2003 Authored highly cited paper in Superconductor Science and Technology journal since
2003 Patent Royalty Awards for patents licensed
2001 Federal Laboratory Consortium (**FLC**) Award for Excellence in Technology Transfer
2001 **Energy-100** award for co-developing the RABiTS Technology 1999 **R&D 100** Award for co-developing the RABiTS Technology
1999 R&D *Sustained* Development Accomplishment Award, Oak Ridge National Laboratory
1999 American Museum of Science & Energy (AMSE)'s "Tribute to Tennessee Technology" Award
1999 World-Class Teamwork Award, Oak Ridge National Laboratory
1997 **Lockheed-Martin NOVA** Award for technical achievement
1997 **Lockheed Martin Scientist of the Year** Award
1997 R&D Significant Technical Accomplishment Award, Oak Ridge National Laboratory
1996, 1997, 1998 Lockheed Martin Energy Research Corp. - Tech. Transfer Award for Technical Support
1996 Department of Energy's (DOE), Office of Science, Materials Science Award for technical achievement
In Solid State Physics
1988-1991 Robert A. Welch Fellowship for Postdoctoral Research, Univ. of Texas at Austin

Graduate and Postdoctoral Advisors:

Ph.D. (1988) with Prof. G.V. Subba Rao (IIT, Madras);
Postdoc (1988-1991) with Prof. John B. Goodenough (UT, Austin);
Research Associate (1991-1993) with Prof. Allen M. Hermann (Univ. Colorado, Boulder).

Student Supervision Experience:

Thesis Advisor and Postgraduate-Scholar Sponsor: I have co-advised several thesis projects of
3 Ph.D. students (through University of Tennessee, Knoxville and University of Houston)
2 M.S. students (through Tenn. Tech. Univ.)
50 Undergraduate students
5 College teachers
26 High school teachers, and
14 postdoctoral scholars

Present Post Docs (1):

Ling Li

Teaching Experience :

Have delivered several lectures, workshop presentations, invited talks, and contributed talks.
Has taught graduate level classes at the University of Tennessee, Knoxville

Collaborators from other Institutions (past 60 months):

Yury Gogotsi, Drexel University
Stephen Harrison, Simbol Materials
Rich Lee, RJLee Group
John Ormerod, Robert Fredette, Magnet Applications Inc.
Scott McCall, Lawrence Livermore National Laboratory
Tom Lograsso, Ikenna Nlebedim, Ames Laboratory
Frank Johnson, GE
Zaffir Chaudhury, UTRC
David Mandrus, University of Tennessee
W. Wong-Ng, L. P. Cook, NIST, Gaithersburg
D. P. Norton, University of Florida
J. Z. Wu, University of Kansas
Dean Miller, V. Maroni, Argonne National Laboratory
V. Selvamanickam, University of Houston
M. W. Rupich, S. Sathyamurthy, C. Thieme, X. Li, American Superconductor Corporation
Y. Chen, SuperPower
D. Larbalestier, E. Hellstrom, Florida State University
Zhengwei Pan, University of Georgia
Q. Xia, Los Alamos National Laboratory
A. Manthiram, J.B. Goodenough, The University of Texas at Austin
A. Manivannan, National Energy Technology Laboratory
Raghu Bhattacharya, C. Teplin, H. Branz, National Renewable Energy Laboratory.
Thomas Fanning, Jon Bornstein, Steve Hane, Ampulse

List of Publications

I. Citation of Paranthaman's Journal Publications (356): Google Scholar Total Citations 12381; h-index: 55 Web of Science Total Citations 9021; h-index: 48

Number of Patents Issued: 30

Number of Books co-edited: 6

Number of Book Chapters/Proceedings Written: 55

Number of Refereed Journal Publications: > 356

II. List of U.S. Patents Issued (30):

1. Paranthaman, M.P; Bi, Z; Bridges, C. A; Brown, G. M, "Mesoporous metal oxide microsphere electrode compositions and their methods of making", United States Patent # 8,911,904, Issued on December 16, 2014.
2. Qiu, X; Paranthaman, M. P; Chi, M; Ivanov, I.N; Zhang, Z, "Array of titanium dioxide nanostructures for solar energy utilization", United States Patent # 8,920,767 Issued on December 30, 2014.
3. Goyal, A; Paranthaman, M; Wee, S, "Chemical Solution Seed Layer for RABiTS Tape", United States Patent # 8,748,350 B2, Issued on June 10, 2014.
4. T. Aytug, M. P. Paranthaman, D. K. Christen, O. Polat, "Hetero-junction photovoltaic device and method of fabricating the device," United States Patent # 8,647,915, Issued on February 11, 2014.
5. T. Aytug, M. Paranthaman, and O. Polat, "Method for producing microstructured templates and their use in providing pinning enhancements in superconducting films deposited thereon," United States Patent # 8,486,864, Issued on July 16, 2013.
6. T. Aytug, M. Parans Paranthaman, and O. Polat, "Phase-separated, epitaxial composite cap layers for electronic device applications and method of making the same," United States Patent # 8221,909, Issued on July 17, 2012.
7. M. Parans Paranthaman, S. Sathyamurthy, T. Aytug, P.N. Arendt, L. Stan, and S.R. Foltyn, "Chemical Solution Deposition Method of Fabricating Highly Aligned MgO Templates" United States Patent # 8,088, 503 B3, Issued on Jan. 3, 2012.
8. M. Parans Paranthaman; Schoop, Urs; Goyal, Amit; Thieme, Cornelis Leo Hans; Verebelyi, Darren T; Rupich, Martin W; "Doped LZO buffer layers for laminated conductors," United States Patent # 7,683,010, Issued on March 23, 2010.
9. M. Parans Paranthaman; Sathyamurthy, Srivatsan; Aytug, Tolga; Arendt, Paul N; Stan, Liliana; Foltyn, Stephen R; "Chemical solution deposition method of fabricating highly aligned MgO templates, United States Patent # 7,553,799, Issued on June 30, 2009.
10. M. P. Paranthaman, and Tolga Aytug, "Superconductors on Iridium Substrates and Buffer Layers," United States Patent # 7,432,229 B2, Issued on October 7, 2008.
11. M. Parans Paranthaman, Urs Schoop, Amit Goyal, C.L.H. Thieme, Darren T. Verebelyi, and Martin W. Rupich, "Doped Y₂O₃ Buffer Layers for Laminated Conductors," U. S. Patent # 7,258,928 B2 (issued Date: August 21, 2007).
12. M. Parans Paranthaman, T. Aytug, and D.K. Christen, "Method of depositing an electrically conductive oxide buffer layer on a textured substrate and articles formed therefrom," U.S. Patent # 6,956,012 (issued Date: October 18, 2005).

13. M.P. Paranthaman, T. Aytug, D.K. Christen, R. Feenstra, and A. Goyal, "Buffer layers and articles for electronic devices," U.S. Patent # 6,764,770 (issued Date: July 20, 2004).
14. M. Parans Paranthaman, T. Aytug, and D.K. Christen, "Method of depositing an electrically conductive oxide buffer layer on a textured substrate and articles formed therefrom," U.S. Patent # 6,617,283 (issued Date: September 9, 2003).
15. D.B. Beach, J.S. Morrell, M. Paranthaman, T. Chirayil, E.D. Specht, and A. Goyal, "Laminate articles on biaxially textured metal substrates," U.S. Patent # 6,663,976 (issued Date: December 16, 2003).
16. R.K. Williams, M. Paranthaman, T.G. Chirayil, D.F. Lee, A. Goyal, and R. Feenstra, "Laminate Article," U.S. Patent # 6,399,154 (Issued Date: June 4, 2002).
17. D.B. Beach, J.S. Morrell, M. Paranthaman, T.G. Chirayil, E.D. Specht, and A. Goyal, "Method of Depositing Buffer Layers on Biaxially Textured Metal Substrates," U.S. Patent # 6,440,211 (Issued Date: August 27, 2002).
18. A. Goyal, D.M. Kroeger, M. Paranthaman, D.F. Lee, R. Feenstra, and D.P. Norton, "Method of depositing a protective layer over a biaxially textured alloy substrate and composition therefrom," U.S. Patent # 6,451,450 (Issued Date: September 17, 2002).
19. M. Paranthaman, A. Goyal, D.M. Kroeger, and F.A. List, "Method of making MgO buffer layers on rolled nickel or copper as superconductor substrates," U.S. Patent # 6,468,591 (Issued Date: October 22, 2002).
20. S.S. Shoup, M. Paranthaman, D.B. Beach, D.M. Kroeger, and A. Goyal, "Buffer Layers on Biaxially Textured Metal Substrates," U.S. Patent # 6,235,402 (Issued Date: May 22, 2001).
21. M. Paranthaman, A. Goyal, D.M. Kroeger, and F.A. List, III, "MgO buffer layers on rolled nickel or copper as superconductor substrates," U.S. Patent # 6,261,704 (Issued Date: July 17, 2001).
22. R.K. Williams, M. Paranthaman, T.G. Chirayil, D.F. Lee, A. Goyal, and R. Feenstra, "Rare Earth Zirconium Oxide Buffer Layers on Metal Substrate," U.S. Patent # 6,270,908 (Issued Date: August 7, 2001).
23. S.S. Shoup, M. Paranthaman, D.B. Beach, D.M. Kroeger, and A. Goyal, "Sol-gel Deposition of Buffer Layers on Biaxially Textured Metal Substances," U.S. Patent # 6,077,344 (Issued Date: June 20, 2000).
24. A. Goyal, E.D. Specht, D.M. Kroeger, M. Paranthaman, "Method of forming Biaxially Textured Alloy Substrates and Devices thereon," U.S. Patent # 6,106,615 (Issued Date: August 22, 2000).
25. M. Paranthaman, D.F. Lee, D.M. Kroeger, and A. Goyal, "Buffer Layers on Rolled Nickel or Copper as Superconductor Substrates," U.S. Patent # 6,150,034 (Issued Date: November 21, 2000)
26. M. Paranthaman, D.F. Lee, D.M. Kroeger, and A. Goyal, "Buffer Layers on Metal Surfaces Having Biaxial Texture as Superconductor Substrates," U.S. Patent # 6,156,376 (Issued Date: December 5, 2000).
27. M. Paranthaman, D.F. Lee, D.M. Kroeger, and A. Goyal, "Buffer Layers on Metal Surfaces Having Biaxial Texture as Superconductor Substrates," U.S. Patent # 6,159,610 (Issued Date: December 12, 2000).
28. A. Goyal, E. D. Specht, D. M. Kroeger, and M. Paranthaman, "Method of forming Biaxially Textured Alloy Substrates and Devices thereon," U.S. Patent # 5,964,966 (Issued Date: October 12, 1999).
29. J.D. Budai, D.K. Christen, A. Goyal, Q. He, D. M. Kroeger, D. F. Lee, F. A. List III, D. P. Norton, M.

Paranthaman, B. C. Sales, and E. D. Specht, "High T_c YBCO Superconductor deposited on Biaxially Textured Ni Substrate," U.S. Patent # 5,968, 877 (Issued Date: October 19, 1999).

30. R. Feenstra, D. K. Christen, and M. Paranthaman, "Method for making High-Critical Current-density $YBa_2Cu_3O_7$ Superconducting layers on Metallic Substrates," U.S. Patent # 5,972,847 (Issued Date: October 26, 1999).

III. Book Chapters/Proceedings (58)

1. Xiu, Faxian, Xu, Jun, Bridges, Craig, A., Joshi, Pooran, and **Paranthaman, M. P.**, 'ZnO Doping and Defect Engineering,' as a book chapter in *Semiconductor Materials for Solar Photovoltaic Cells*, Edited by M. P. Paranthaman, R. Bhattacharya and W. Wong, 2015.
2. **Paranthaman, M. Parans**, Liu, H., Sun, X.-G., Dai, S., and Brown, G.M., 'Aluminum-ion batteries for medium- and large-scale energy storage,' published as a book chapter # 13 in a book titled, 'Advances in Batteries for Medium and Large-Scale Energy Storage, Elsevier, 2014.
3. **Paranthaman, M.P.**, Aytug, T., Stan, L., Jia, Q., and Cantoni, C., 'YBCO-Coated Conductors,' published as a book chapter in a Superconductivity book edited by P. Seidal, pp. 355-365, Wiley-VCH, 2015.
4. **M. Parans Paranthaman**, "Chemical Solution Deposition Based Oxide Buffers and YBCO Coated Conductors, Published as a book chapter in a book titled, "Applications of High-Tc Superconductivity," pp. 193-200, Edited by Adir Moyses Luiz, Intech Publications, Croatia, Published June 2011 (ISBN 978-953-307-308-8).
5. **M. Parans Paranthaman**, "YBCO Coated Conductors," published as a book chapter in a book entitled, "High Temperature Superconductors," edited by R.N. Bhattacharya, and M. P. Paranthaman, published by -VCH Verlag GmbH & Co. KGaA, Weinheim (2010).
6. **M. Parans Paranthaman**, "Superconductor Wires," 2006 McGraw-Hill Yearbook of Science & Technology, pp. 319-322 (2006).
7. T. Aytug, D. K. Christen, **M. Paranthaman**, A. A. Gapud, H. M. Christen, S. Kang, M. Varela, K. J. Leonard, A. Goyal, P. M. Martin, J. R. Thompson, A. O. Ijaduola, R. Meng, I. Rusakova, T. H. Johansen, C. W. Chu, and S. W. Chan, "Enhancement of Flux Pinning in $YBa_2Cu_3O_{7-\delta}$ Films via Nano-Scale Modifications of Substrate Surfaces," Book chapter in *Flux Pinning and AC Loss Studies on YBCO Coated Conductors*, Edited by M. Parans Paranthaman, and Venkat Selvamanickam, Nova Science Publishers Inc., New York, pp. 237-262 (2007).
8. **M. Parans Paranthaman**, and Venkat Selvamanickam, "Flux Pinning and AC Loss in Second Generation High Temperature Superconductor Wires," Book chapter in *Flux Pinning and AC Loss Studies on YBCO Coated Conductors*, Edited by M. Parans Paranthaman, and Venkat Selvamanickam, Nova Science Publishers Inc., New York, pp. 3-10 (2007).
9. Bhuiyan, M.S.; **Paranthaman, M.P.**; Beach, D.; Heatherly, L.; Goyal, A.; Payzant, E.A. Epitaxial Growth of Eu_3NbO_7 buffer layers on Biaxially Textured Ni-W Substrates, *Ceramic Transactions* (Proc. of the 106th Annual Meeting of the American Ceramic Society, Indianapolis, Indiana, 2004), Edited by M. Parans Paranthaman et al., High-Temperature Superconductor Materials, Devices, and Applications, 2005, Vol. 160, pp. 35-41.
10. **M. Parans Paranthaman**, "Non-fluorine Based Bulk Solution Techniques to Grow Superconducting $YBa_2Cu_3O_{7-\delta}$ Films – A Review," Chapter 12, pp. 195-214 in a book titled, *Next Generation HTS Conductors*," Edited by Amit Goyal, Kluwer Academic Publishers, Massachusetts, USA (2004).
11. **Paranthaman, M.P.**; Aytug, T.; Zhai, H.Y.; Gapud, A.A.; Martin, P.M.; Leonard, K.J.; Goyal, A.; Christen, D.K. Perovskite Type Buffers for YBCO Coated Conductors, *Ceramic Transactions* (Proc. of the 106th Annual

Meeting of the American Ceramic Society, Indianapolis, Indiana, 2004), Edited by Winnie Wong-Ng et al., Synthesis, Properties, and Crystal Chemistry of Perovskite-Based Materials, Vol. 169, 2005, pp. 49-58.

12. **Paranthaman, M.P.**; Sathyamurthy, S.; Aytug, T.; Leonard, K.; Goyal, A.; Zhai, H.Y.; Kroeger, D.M.; Christen, D.K.; Li, X.; Verebelyi, D.T.; Schoop, U.; Thieme, C.; Kodenkandath, T.; Zhang, W.; Rupich, M.W. Buffer layer R & D for YBCO coated conductor composite wires, *AIP Conference Proceedings* (Proc. of the 2003 Cryogenic Engineering Conference/International Cryogenic Materials Conference (CEC/ICMC)), No. 711, Part 2, 2004, pp. 645-652.
13. **Paranthaman, M.P.**; Aytug, T.; Zhai, H.Y.; Christen, H.M.; Christen, D.K.; Goyal, A.; Heatherly, L; Kroeger, D.M. Development of low-cost alternative buffer layer architectures for YBCO coated conductors, *Ceramic Transactions* (Proc. of the 105th Annual Meeting of the American Ceramic Society, Nashville, Tennessee, 2003), Edited by Ruling Meng et al., Fabrication of Long-Length and Bulk High-Temperature Superconductors, Vol. 149, 2004, pp. 33-41.
14. Bhuiyan, M.S.; **Paranthaman, M.P.**; Sathyamurthy, S.; Aytug, T.; Kang, S.; Lee, D.F.; Goyal, A.; Payzant, E.A.; Salama, K. Growth of epitaxial Y2O3 film on biaxially textured Ni-W substrates, *Frontiers in Superconducting Materials - New Materials and Applications Symposium* (Mater. Res. Soc. Symposium Proceedings Vol. EXS-3), 2004, pp. 57-59.
15. Sathyamurthy, S., **M. Paranthaman**, H.Y. Zhai, S. Kang, C. Cantoni, S. Cook, L. Heatherly, A. Goyal, H.M. Christen, M.S. Bhuiyan, and K. Salama, "Solution Buffer Layers for YBCO Coated Conductors," *Ceramic Transactions* (Proc. of the 105th Annual Meeting of the American Ceramic Society, Nashville, Tennessee, 2003), Edited by Ruling Meng et al., Fabrication of Long-Length and Bulk High-Temperature Superconductors, Vol. 149, pp. 3-8, 2004.
16. H.Y. Zhai, H.M. Christen, **M.P. Paranthaman**, C. Cantoni, L. Zhang, C.W. White, D.K. Christen, D.H. Lowndes, "Progress and Perspectives in Magnesium Diboride Films," Chapter 7, pp.207-236 in a book titled, "Studies of High Temperature Superconductors (Advances in Research and Applications) Layered Cuprates and More on Magnesium Diboride," Vol. 44, Edited by A. Narlikar, Nova Sci. Pub., New York (2003).
17. **M. Paranthaman**, D. K. Christen, H. M. Christen, J. R. Thompson, C. Cantoni, H. Y. Zhai and R. Jin, Superconducting MgB₂ Films with Enhanced Critical Current Densities and Irreversibility Fields, Published as a book chapter in Volume 38: "Studies of High Temperature Superconductors" Edited by A. Narlikar, Nova Science Publishers Inc., Commack, New York, 475-484, (2002).
18. Xu, Y.L.; Shi, D.; Goyal, A.; **Paranthaman, M.P.**; Rutter, N.A.; Martin, P.M.; Kroeger, D.M. YBa₂Cu₃O₇-delta films through a fluorine free TMAP MOD approach, *Ceram. Trans.; Processing of High-Temperature Superconductors Book Series*, Editor(s): Goyal A.; Wong Ng W.; Murakami M.; Driscoll J., Vol. 140, 2003, pp. 129-136.
19. Cheggour, N.; Ekin, J.W.; Clickner, C.C.; Feenstra, R.; Goyal, A.; **Paranthaman, M.P.**; Rutter, N. Effect of transverse compressive stress on transport critical current density of Y-Ba-Cu-O coated Ni and Ni-W rabbits tapes, *Ceram. Trans.; Processing of High-Temperature Superconductors Book Series*, Editor(s): Goyal A.; Wong Ng W.; Murakami M.; Driscoll J., Vol. 140, 2003, pp. 157-170.
20. **Paranthaman, M.P.**; Sathyamurthy, S.; Zhai, H.Y.; Christen, H.M.; Kang, S.; Goyal, A. Demonstration of high current density YBCO films on all solution buffers, *Ceram. Trans.; Processing of High-Temperature Superconductors Book Series*, Editor(s): Goyal A.; Wong Ng W.; Murakami M.; Driscoll J., Vol. 140, 2003, pp. 249-254.

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