Curriculum Vitae
M. Parans Paranthaman, Ph.D.
Oak Ridge National Laboratory/The University of Tennessee, Knoxville

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

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Education/Training

Institution and Location	Degree	Year(s)	Field of Study
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

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Research and Professional Experience

2017-Present: Corporate Fellow and Group Leader, Materials Chemistry Group, Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

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

2006-2016: 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 Nobel Prize Winner **Professor John B. Goodenough**)

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

Editorial Boards – Journals

Associate Editor, Journal of the American Ceramic Society (2004-Present)
Editorial Board, Applied Sciences (2017-2019)
Editorial Board, MRS Advances (2016-2018)
Co-editor, MRS Advances, MRS Spring 2016 Meeting Proceedings, March 2016
Key Reader: Metallurgical and Materials Transactions E: Materials for Energy Systems (2014-2018)
International Editorial Board, European Superconductivity News Forum (2012-Present)
Editorial Board, Advances in Materials Research (2011-Present)

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

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

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

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

Technical Editor, Materials Branch, IEEE Trans. on Applied Superconductivity, Applied Superconductivity Conference, Seattle, Washington, August 2006

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

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: National Academy of Inventors (NAI) (2018)
- Fellow: American Physical Society (APS) (2018)
- Fellow: UT-Battelle/ORNL Corporate Fellow (2017)
- Fellow: Materials Research Society (MRS) Fellow (2017)
- Fellow: American Association for the Advancement of Science (AAAS) (2016)
- Fellow: The American Ceramic Society (2015)
- Fellow: ASM International, The Materials Information Society (2014)
- Fellow: Institute of Physics, London, UK (2004)
- Member: TMS, 2015-present
- Member: American Chemical Society, 2009-present
- Member: Electrochemical Society, 2009-present

Conferences/Workshops Organized

- Co-Organizer2020 TMS Annual Meeting & Exhibition, Symposium: Recent Advances in Functional Materials and 2D/3D Processing for Sensors and Electronic Applications; Organizer(s): Pooran Joshi; Ravindra Nuggehalli; Anming Hu; Tolga Aytug; Konstantinos Sierros; Mariappan Paranthaman; Sponsor(s): TMS: Thin Films and Interfaces Committee.
- 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 R&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
- 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

- ORNL Innovation Crossroads Committee Member (2019-Present)
- Committee Member, National Academy of Inventors (NAI) (2018-Present)
- Chair, Bredesen Center Faculty Credentials Committee, Univ. of Tenn., Knoxville (2017-Present)
- Co-chair, ORNL Corporate Fellow Committee (2018-Present)
- Member, Bredesen Center Director Search Committee, Univ. of Tenn., Knoxville (2018)
- ORNL Distinguished Fellows Review Committee Member (2017-2018)
- ORNL Postdoc Group Mentor (2017)
- Reviewer Advanced Light Source User Proposals, Lawrence Berkeley National Laboratory, CA, 2013-Present
- Reviewer 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

2019 ORNL Director's Award: **Top Scientist** of the Year Award
2019 **Mentor of the Year** at ORNL, Awards Night
2019 ORNL Technology Commercialization Award
2019 TechConnect Innovation Award, Boston MA
2019 Cited in Frontiers of Materials Research (National Academy of Sciences Report)
2018 Fellow of National Academy of Inventors (NAI)
2018 Fellow of American Physical Society (APS)
2017 UT-Battelle **Corporate Fellow**

2017 **Fellow** of Materials Research Society (MRS)
2017 ORNL **Technology Commercialization** Award
2017 Battelle Celebration of Solvers Award, Columbus OH
2017 **Seventh R&D 100 Award** Winner: Additive Manufacturing of Magnets
2016 Cited in The Economist Article – Magnetic Moments (Additive Manufacturing)
2016 UT-Battelle **Inventor of the Year**
2016 ORNL **Technology Commercialization** Award
2016 Sixth **R&D 100 Award**: Waste-tire derived carbon for lithium ion batteries
2016 Scholar of the week, The University of Tennessee, Knoxville
2015 **Fellow** of the American Association for the Advancement of Science (AAAS)
2015 Fifth **R&D100 Award:** Multifunctional Superhydrophobic Transparent Glass Coating. Finalist in two Categories (Mechanical Devices/Materials and Market Disruptor Product).
2015 **Fellow** of the American Ceramic Society
2015 ORNL **Technology Commercialization** Award
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 $LaMnO_3$ Enabled, High-Temperature Superconducting Tape
2007 DOE Excellent Mentor Award
2007 DOE Superconductivity Program Annual Peer Review, "Received top ranking with unprecedented high 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**
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
1998 Lockheed Martin Energy Research Corp.- Tech. Transfer Award for Technical Support
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
1997 Lockheed Martin Energy Research Corp.- Tech. Transfer Award for Technical Support
1996 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. (1982-1988) with Prof. G.V. Subba Rao (IIT, Madras);
Postdoc (1988-1991) with Prof. John B. Goodenough (Nobel Prize Winner for Chemistry 2019) (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.)
70 Undergraduate students; 5 College teachers; 30 High school teachers, and 15 postdoctoral scholars

Present Post Docs (2):
Tej Lamichhane
Mihee Ji

Present Graduate Students (2)
Haobo Wang

Sam F. Evans

Teaching Experience
Has delivered over 100 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 of Parans Paranthaman

I. Summary of Paranthaman's Publications

Journal Publications: **>422**
Web of Science Total Citations **13,125;** h-index: **55**
Google Scholar Total Citations **18,788;** h-index: **65**
Total Number of Inventions: **>82**
U.S. Patents Issued: **49**
Patent Applications Published: **>23**
Invention Disclosures Submitted/Elected to File/Patent Applications Filed: >**10**
Books co-edited: **7**
Book Chapters/Proceedings Written: **58**
Invited Presentations: **> 100 (since 2010)**

II. Selected List of Journal Publications (Total of > 422)

1. P. Manikandan, V. G. Pol, S. F. Evans, K. Jackson, C. J. Jafta, C. A. Bridges, S. Dai, A. M. Levine, R. J. Lee, A. K. Naskar, and M. P. Paranthaman, "Encapsulated Sb and Sb_2O_3 Particles in Waste-tire Derived Carbon as Stable Composite Anodes for Sodium-ion Batteries," *Sustainable Energy & Fuels* 4, 3613-3622 (2020). DOI: 10.1039/D0SE00408A

2. Corson L Cramer, Trevor G Aguirre, Natalie R Wieber, Richard A Lowden, Artem Trofimov, Hsin Wang, Jiaqiang Yan, M Parans Paranthaman, Amy M Elliott, "Binder jet printed WC infiltrated with pre-made melt of WC and Co," *International Journal of Refractory Metals and Hard Materials* 87, 105137 (2020). https://doi.org/10.1016/j.ijrmhm.2019.105137

3. Mihee Ji, Neil R. Taylor, Ivan Kravchenko, Pooran Joshi, Tolga Aytug, Lei R. Cao, and M. Parans Paranthaman, "Demonstration of Large-size Vertical Ga_2O_3 Schottky Barrier Diodes," *IEEE Trans. on Power Electronics* (2020). 10.1109/TPEL.2020.3001530

4. Neil R. Taylor, Yongchao Yu, Mihee Ji, Tolga Aytug, Shannon Mahurin, Richard Mayes, Sacit Cetiner, M. Parans Paranthaman, Dianne Ezell, Lei R. Cao, and Pooran Joshi, "Thermal and radiation response of 4H-SiC Schottky diodes with direct-write electrical contacts," *Appl. Phys. Lett*. 16 (25) 252108 (2020). https://doi.org/10.1063/5.0007496

5. Abhishek Sarkar, Somashekara M. A., M. Parans Paranthaman, Matthew Kramer, Christopher Haase, and Ikenna C. Nlebedim, "Functionalizing Magnet Additive Manufacturing with In-Situ Magnetic Field Source," *Additive Manufacturing* 34, 101289 (2020). https://doi.org/10.1016/j.addma.2020.101289

6. M. Parans Paranthaman, Volkan Yildrim, Tej Nath Lamichhane, Benjamin A. Begley, Brian K. Post, Ahmad A. Hassen, Brian C. Sales, Kinjal Gandha, Ikenna C. Nlebedim, "Additive Manufacturing of Isotropic NdFeB PPS Bonded Permanent Magnets, *Materials* (2020).

7. Kinjal Gandha, Ikenna C. Nlebedim, Vlastimil Kunc, Edgar Lara-Curzio, Robert Fredette, and M. Parans Paranthaman, "Additive Manufacturing of Highly Dense Anisotropic Nd-Fe-B Bonded Magnets," *Scripta Materialia* 183, 91-95 (2020). https://doi.org/10.1016/j.scriptamat.2020.03.012

8. K. Liu, S.S. Tan, J. Moon, C.J. Jafta, C. Li, T. Kobayashi, H. Lyu, C.A. Bridges, S. Men, W. Guo, Y.F. Sun, J.L. Zhang, M.P. Paranthaman, X.G. Sun, and S. Dai, "Insights into the Enhanced Cycle and Rate Performances of the F-Substituted P2-Type Oxide Cathodes for Sodium-Ion Batteries," *Adv. Energy Mater*. 10 (19) 2000135, 2020. DOI: 10.1002/aenm.202000135

9. A. Ying, S. F. Evans, C. Tsouris, M. P. Paranthaman, "Magnetic Sorbent for the Removal of Selenium (IV) from Simulated Industrial Wastewaters: Determination of Column Kinetic Parameters", *Water* 12 (2020) 1234. https://doi.org/10.3390/w12051234

10. P. Wagh, S. Z. Islam, V. G. Deshmane, P. Gangavarapu, J. Poplawsky, G. Yang, R. Sacci, S. F. Evans, S. Mahajan, M. P. Paranthaman, B. A. Moyer, S. Harrison, and R. Bhave, "Fabrication and characterization of Composite Membranes for the Concentration of Lithium Containing Solutions using Forward Osmosis", submitted to Advanced Functional Materials.

11. Zachary D. Hood, Xuan Yuang, Yunchao Li, Amit Naskar, Miaofang Chi, and M. Parans Paranthaman, "Conversion of Waste Tire Rubber into High-Value-Added Carbon Supports for Electrocatalysis," *J. Electrochem. Soc*. 2018, 165 (14), H881-H888. DOI: 10.1149/2.1081813jes

12. Joseph S. Gnanaraj, Richard J. Lee, Alan M. Levine, Jonathan L. Wistrom, Skyler L. Wistrom, Yunchao Li, Jianlin Li, Kokouvi Akato, Amit K. Naskar, and Mariappan P. Paranthaman, "Sustainable Waste Tire Derived Carbon Electrode as a Potential Anode for Lithium Ion Batteries," *Sustainability*, 2018, 10(8), 2840. doi:10.3390/su10082840

13. Kinjal Gandha, Ling Li, I. C. Nlebedim, Brian K. Post, Vlastimil Kunc, Brian C. Sales, Robert Fredette, John Ormerod, James Bell, and M. Parans Paranthaman, "Additive Manufacturing of Anisotropic Hybrid NdFeB-SmFeN Nylon Composite Bonded Magnets," *J. Magn. and Magn. Mater.* 2018, 467, 8-13. DOI: 10.1016/j.jmmm.2018.07.021

14. Lili Wu, Ling Li, Samuel F. Evans, Tessa A. Eskander, Bruce A. Moyer, Zhichao Hu, Paul J. Antonick, Stephen Harrison, M. Parans Paranthaman, Richard Riman, and Alexandra Navrotsky, *J Am Ceram Soc.* 102 (5) 2398-2404 (2019). DOI: 10.1111/jace.16150

15. Hailong Lyu, Yunchao Li, Charl Jafta, Craig Bridges, H. M. Meyer, A. Borisevich, M. P. Paranthaman, Sheng Dai, and Xiao-Guang Sun, "Bis(trimethylsilyl) 2-fluoromalonate derivatives as electrolyte additives for high voltage lithium ion batteries," *J. Power Sources* 2019, 412, 527-535. https://doi.org/10.1016/j.jpowsour.2018.11.083

16. Helena A. Khazdozian, Ling Li, M. Parans Paranthaman, Scott K. McCall, Matthew J. Kramer, and I C. Nlebedium, "Low Field Alignment of Anisotropic Bonded Magnets for Additive Manufacturing of Permanent Magnet Motors," *JOM* 71 (2) 626-632 (2019). https://doi.org/10.1007/s11837-018-3242-0

17. C. J. Jafta, X.-G. Sun, G. M. Veith, G. V. Jensen, S. M. Mahurin, M. P. Paranthaman, S. Dai and C. A. Bridges, "Probing Microstructure and Electrolyte Concentration Dependent Cell Chemistry via Operando Small Angle Neutron Scattering," *Energy & Environmental Science*s (2019). DOI: 10.1039/C8EE02703J.

18. C. J. Jafta, B. P. Thapaliya, H. Lyu, J. Xia, H. M. Meyer, M. P. Paranthaman, X.-G. Sun, C. A. Bridges, S. Dai, "Fluorination of Mxene by Elemental F2 as Electrode Material for Lithium-ion Batteries, *ChemSusChem* 12, 1-10 (2019). DOI: 10.1002/cssc.201900003

19. S. F. Evans, M. R. Ivancevic, D. J. Wilson, Z. D. Hood, S. P. Adhikari, A. K. Naskar, C. Tsouris, and M. P. Paranthaman, "Carbon Polyaniline Capacitive Deionization Electrodes with Stable Cycle Life," *Desalination* 464, 25-32 (2019). https://doi.org/10.1016/j.desal.2019.04.002

20. K. Gandha, G. Ouyang, S. Gupta, V. Kunc, M. P. Paranthaman, and I. C. Nlebedim, "Recycling of additively printed rare-earth bonded magnets," *Waste Management* 90, 94-99 (2019). https://doi.org/10.1016/j.wasman.2019.04.040

21. S. F. Evans, M. R. Ivancevic, J. Yan, A. K. Naskar, A. M. Levine, R. J. Lee, C. Tsouris, and M. P. Paranthaman, "Magnetic Adsorbents for Selective Removal of Selenite form Contaminated Water," *Separation Science and Technology* 54 (13), 2138-2146 (2019) https://doi.org/10.1080/01496395.2019.1617742

22. Z. Hood, Y. Cheng, S. F. Evans, and M. P. Paranthaman, "Unraveling the structural properties and dynamics of sulfonated tire-derived solid acid carbon catalysts with neutron vibrational spectroscopy," *Catalysis Today* (2019). https://doi.org/10.1016/j.cattod.2019.10.033

23. L. Wu, S. F. Evans, Y. Cheng, A. Navrotsky, B. A. Moyer, S. Harrison, and M. P. Paranthaman, "Neutron spectroscopic and thermochemical characterization of lithium-aluminum layered double hydroxide chloride: Implications for lithium recovery," *J. Phys. Chem C* 123 (34), 20723-20729 (2019). https://doi.org/10.1021/acs.jpcc.9b04340

24. C. L. Cramer, P. Nandwana, J. Yan, S. F. Evans, A. M. Elliott, C. Chinnasamy, and M. P. Paranthaman, "Binder Jet Additive Manufacturing Method to Fabricate Near Net Shape Crack-free Highly Dense

Fe=6.5 wt.% Si Soft Magnets," *Heliyon* 5 (11), e02804 (2019). https://doi.org/10.1016/j.heliyon.2019.e02804

25. Brett G. Compton, James W. Kemp, Timofei V. Novikov, Robert C. Pack, I.C. Nlebedim, Chad E. Duty, Orlando Rios, and M. Parans Paranthaman, "Direct-write 3D-printing of NdFeB bonded magnets," *Materials and Manufacturing Processes* 1-5 (2016) http://dx.doi.org/10.1080/10426914.2016.1221097

26. Ling Li, Brian Post, Vlastimil Kunc, Amy M. Elliott, and M. Parans Paranthaman, "Additive manufacturing of near-net-shape bonded magnets: prospects and challenges," *Scripta Materialia* **135**, 100-104 (2017) http://dx.doi.org/10.1016/j.scriptamat.2016.12.035

27. M. P. Paranthaman, I. C. Nlebedim, F. Johnson, and S. K. McCall, "Additive Manufacturing of Permanent Magnets", *Materials Matters* **11** p111-116 (2016) (Sigma Aldrich). http://www.sigmaaldrich.com/content/dam/sigma-aldrich/docs/Aldrich/Brochure/1/material-matters-v11-n4.pdf

28. Ling Li, Angelica Tirado, B. S. Conner, Amy M. Elliott, Orlando Rios, Haidong Zhou, and M. Parans Paranthaman, "Densification and coercivity enhancement of a binder jet printed NdFeB bonded magnet through low-melting eutectic alloy infiltration," *J. Mag. Mag. Mater*. 438, 163-167 (2017). http://dx.doi.org/10.1016/j.jmmm.2017.04.066

29. Niyanth Sridharan, Ercan Cakmak, Fred A. List, Huseyin Ucar, Steve Constantinides, S.S. Babu, S.K. McCall, and M. Parans Paranthaman, "Rationalization of solidification mechanism of Nd-Fe-B magnets during laser directed-energy deposition," *J Mater Sci* 53, 8619 (2018) https://doi.org/10.1007/s10853-018-2178-7

30. L. Li, K. Jones, B. Sales, J. L. Pries, I. C. Nlebedim, K. Jin, H. Bei, B. K. Post, M. S. Kesler, O. Rios, V. Kunc, R. Fredette, J. Ormerod, A. Williams, T. A. Lograsso, M. P. Paranthaman, "Fabrication of Highly Dense Isotropic Nd-Fe-B Bonded Magnets via Extrusion-based Additive Manufacturing," *Additive Manufacturing* 21, 495 (2018). https://doi.org/10.1016/j.addma.2018.04.001

31. Kinjal Gandha, Ling Li, I. C. Nlebedim, Brian K. Post, Vlastimil Kunc, Brian C. Sales, Robert Fredette, John Ormerod, James Bell, and M. Parans Paranthaman, "Additive Manufacturing of Anisotropic Hybrid NdFeB-SmFeN Nylon Composite Bonded Magnets," *J. Magn. and Magn. Mater.* 2018, 467, 8-13. **DOI:** 10.1016/j.jmmm.2018.07.021

32. Y. Li, S. Wan, G.M. Veith, R.R. Unocic, M.P. Paranthaman, S. Dai, and X.G. Sun, "A Novel Electrolyte Salt Additive for Lithium-Ion Batteries with Voltages Greater than 4.7 V," *Adv. Energy Mater.* 7, 1601397 (2017). **DOI:** 10.1002/aenm.201601397

33. J.S. Zhang, J.A. Schott, Y. Li, W.C. Zhan, S.M. Mahurin, K. Nelson, X.G. Sun, M.P. Paranthaman, and S. Dai, "Membrane-Based Gas Separation Accelerated by Hollow Nanosphere Architectures," *Adv. Mater.* 29, 1603797 (2017). **DOI:** 10.1002/adma.201603797

34. I.C. Nlebedim, H. Ucar, C.B. Hatter, R.W. McCallum, S.K. McCall, M.J. Kramer, and M.P. Paranthaman, "Studies on in situ Magnetic Alignment of Bonded Anisotropic Nd-Fe-B Alloy Powders," *J. Mag. And Mag. Mater.* 422, 168 (2017). **DOI:** 10.10161/j.jmmm.2016.08.090

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50. **M. Paranthaman** and A. M. Hermann, Thallium Based High-T_c Superconducting Oxides - A Summary. In *Organic Conductors: Fundamentals and Applications*, Jean-Pierre Farges ed., 735-737 (Marcel Dekker, Inc., New York, **1994**).

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52. **M. Paranthaman**, A. Manthiram and J. B. Goodenough, Chemical Characterization of Thallium-Cuprate Superconductors. *In Thallium-Based High Temperature Superconductors*, A.M. Hermann and J.V. Yakhmi eds., 147-175 (Marcel Dekker, Inc., New York, **1993**).

53. **M. Paranthaman**, H. M. Duan and A. M. Hermann, Single Crystal Growth and Characterization of Thallium-Cuprate Superconductors - A Review. In *Thallium-Based High Temperature Superconductors*, A.M. Hermann and J.V. Yakhmi eds., 177-194 (Marcel Dekker, Inc., New York, **1993**).

54. **M. Paranthaman**, W. Kiehl and A. M. Hermann, Synthesis and Characterization of $Tl_2Ba_2CuO_6$ Systems - A Review. In *Studies of High Temperature Superconductors*, A. V. Narlikar ed., Vol. 11, 353-381 (Nova Science Publishers, Inc., New York, **1993**).

55. **Paranthaman, M.P**.; Manthiram, A.; Goodenough, J.B. Chemical Characterization of Thallium Cuprate Superconductors. Proc. of the ICMC '90 Topical Conference. High-Temperature Superconductors. Materials Aspects. Garmisch-Partenkirchen, FRG (May 1990).

56. Manoharan, R.; **Paranthaman, M.P**.; Goodenough, J.B. Electrocatalysis on Sr1-xNbO3-d ($0.05 \leq x \leq 0.3$). Proc. of the 176th Electrochemical Society Meeting, Hollywood, Florida (1989).

57. Rao, G.V.S.; Varadaraju, U.V.; **Paranthaman, M.P**.; Sankaranarayanan, V.; Ravindran, R.; Srinivasan, R. Superconductivity Studies on Tl-Ba-Ca-Cu-O System. Proc. of the 1st Asia-Pacific Conference on Condensed Matter Physics (World Scientific, Singapore) p.305 (1989).

58. Rao, G.V.S.; Aruchamy, A.; Aravamudan, G.; **Paranthaman, M.P**. Studies on Photoelectrochemical Behavior of Certain Oxide Materials for Photoassisted Electrolysis of Water. Adv. Hyd. Energy, 4 (Hydrogen Energy Progress V, Vol. 3), T.N. Veziroglu and J.B. Taylor eds., pp. 1075-1083 (Pergamon Press, New York, 1984).

Selected Invited Presentations Given by Paranthaman (> 100; Since 2010)

1. Invited Speaker, Title: Additive Printing of High Performance Magnets, ORNL Facilities and Operations Division Meeting, October 1, 2018.

2. Invited Speaker, Title: Lithium Ion Batteries and Beyond, Navy Visit, ORNL, TN, October 11, 2018.

3. Invited Speaker, Title: Novel Carbon Polyaniline Capacitive Deionization Electrodes and Magnetic Nano-adsorbents for Water Treatments, 20th Symposium on Separation Science and Technology for Energy Applications, Gatlinburg, TN, October 23, 2018.

4. Invited Speaker, Title: Additive Printing of High Performance Magnets, ORNL Oregon State University Visit, Oak Ridge, TN, November 1, 2018.

5. Invited Speaker, Title: Additive Printing of High Performance Magnets, ORNL Dyson Company Visit, Oak Ridge, TN, November 2, 2018.

6. Invited Speaker, Title: Additive Printing of High Performance NdFeB Magnets, Busek Company Visit, Natick, MA, November 12, 2018.

7. Invited Speaker, Title: Additive Printing of High Performance NdFeB Magnets, ORNL SuperPower Company Visit, Oak Ridge, TN, November 13, 2018.

8. Invited Speaker, Title: Lithium Extraction using LDH Sorbents from Geothermal Brine Solution, American Institute of Chemical Engineers Local Chapter, Knoxville TN, November 15, 2018.

9. Invited Speaker, Title: Lithium Extraction from Geothermal Brine Solution, CMI Webinar Series, November 28, 2018

10. Invited Speaker, Title: Additive Printing of High Performance NdFeB Magnets, ORNL SULI Interns, Oak Ridge, TN, December 11, 2018.

11. Invited Speaker, Title: Additive Manufacturing of Magnets, US-Japan Bilateral Workshop, Washington DC, January 9, 2019.

12. AM Magnets: Panel Chair: Invited Speaker, Title: Additive Manufacturing of Magnets, Magnetics 2019, Orlando, FL, January 31, 2019.

13. Invited Speaker: Title: Additive Manufacturing of Magnets, NREL Visit, Golden, CO, February 4, 2019.

14. Invited Speaker: Title: Additive Manufacturing of High Performance NdFeB Nylon Polymer Bonded Magnets, Dyson Magnet Group, ORNL, TN, February 11, 2019.

15. Invited Speaker: Title: Recovery of Carbon from Recycled Tire Rubber for Energy Storage Applications, SULI interns, ORNL, TN, February 13, 2019.

16. Invited Speaker: Title: Additive Manufacturing of High Performance NdFeB Magnets, Roane State Community College, Oak Ridge, TN, February 20, 2019.

17. Keynote Speaker: Title: Novel Tire-derived Carbon Catalysts for Converting Waste Cooking Oil into Biofuel, Catalysis 2019 Meeting, Houston, TX, February 25, 2019

18. Invited Speaker: Title: 3-D Printing of NdFeB Nylon Polymer Bonded Magnets, APS Press Meet, Boston, MA, March 4, 2019.

19. Invited Speaker: Title: Additive Manufacturing of High Performance Anisotropic NdFeB Permanent Magnets, TMS Spring 2019 Meeting, San Antonio, TX, March 12, 2019.

20. Invited Speaker: Title: Additive Manufacturing of High Performance Rare Earth Permanent Magnets: Prospects and Challenges, TMS Spring 2019 Meeting, San Antonio, TX, March 13, 2019.

21. Invited Speaker: Title: Additive Manufacturing of Magnets, AMO Stakeholders Meeting, ORNL, TN, March 26, 2019.

22. Speaker: Title: Novel carbon electrodes for next generation intercalation batteries, MRS Spring Meeting, Phoenix, AZ, April 25, 2019.

23. Invited Speaker: Title: Additive Manufacturing of High Performance Magnets, IEEE Magnetics Society Workshop, Virginia Commonwealth University, Richmond, VA, June 7, 2019.

24. Invited Speaker: Title: Additive Manufacturing of High Performance NdFeB Magnets, Sandia National Laboratory Magnet Workshop, Albuquerque, NM, June 18, 2019.

25. Keynote Speaker: Title: Additive Manufacturing of High Performance NdFeB Magnets, 4th International Conference on Magnetism and Magnetic Materials, London, UK, August 19, 2019.

26. Invited Speaker: Title: Additive Manufacturing of High Performance NdFeB Magnets, Department of Physics, University of Warwick, Coventry, UK, August 20, 2019.

27. Tire derived carbon for Sodium Ion Batteries, Chairing Session: Battery and Energy Technology; New Orleans, Louisiana, May 28 – June 1, 2017; http://www.electrochem.org/231

28. Additive Manufacturing of NdFeB Magnets, INTERMAG 2017, Dublin, Ireland, April 24-28, 2017; http://intermag2017.com/

29. Additive Manufacturing of NdFeB Magnets, Army Research Lab Director Visit to ORNL, April 10, 2017

30. 3D Printing of Bonded Magnets, Tengam, Magnet company, Grand Rapids, Michigan, March 23, 2017; http://www.tengam.com/

31. Recovery of Carbon from Recycled Tires for Energy Storage Applications, ORNL SULI/CCI Interns, Oak Ridge, Tennessee, March 15, 2017

32. Novel Tire Derived Carbon for Energy Storage Applications College of Engineering, Florida State University, February 1-2, 2017; Presented two department seminars

33. Big Area Additive Manufacturing of NdFeB Bonded Magnets, at the Magnetics 2017 conference and CMI Industry Meet, Orlando, Florida, January 18-20, 2017

34. Additive Manufacturing of Bonded Magnets, Arnold Magnetics Technologies, Rochester, New York, December 12, 2016; http://www.arnoldmagnetics.com/en-us/

35. Invited Speaker, Title: Safe and Fast Charging Structural Lithium-Ion Batteries, Global Security Directorate – SAG Meeting, ORNL, Oak Ridge, Tennessee, December 6, 2016

36. Speaker, Two oral presentations, Title: High Performance Tire-Derived Carbon Anodes for Sodium-Ion Batteries, and Additive Manufacturing of Permanent Magnets, MRS Fall Meeting, Boston, Massachusetts, November 27- December 2, 2016; http://www.mrs.org/fall2016

37. Invited Speaker, Title: Current Status of Bonded Magnets Research, US – Japan 4th Bilateral Workshop, Ames Laboratory, Ames, Iowa, November 7-8, 2016

38. Invited Speaker, Title: Novel Carbon Materials for Energy Storage Applications, ORNL SULI/CCI Interns, Oak Ridge, Tennessee, October 12, 2016

39. Webinar Presentation, Additive Manufacturing of NdFeB Permanent Magnets, CMI Website Published, September 21, 2016 – Record number of listeners signed up for this CMI popular webinar presentation

40. Invited Speaker, Title: Additive Manufacturing of Permanent Magnets, CMI Annual Meeting, Oak Ridge, Tennessee, August 16-18, 2016

41. Invited Speaker, Title: Recovery of Lithium from Geothermal Brines and Current Status of Lithium-ion Batteries, Hazen Research, Denver, Colorado, August 12, 2016

42. Invited Speaker, Aluminum Lithium Hybrid Battery, Alcoa Technology Center, Pittsburgh, PA, May 18-19, 2016

43. Invited Speaker, Department Seminar, Title: Novel Carbon from Recycled Tires for Batteries and Supercapacitors, Wake Forest University, Winston-Salem, North Carolina, April 27-28, 2016

44. Invited Speaker, Title: Low-cost tire-derived carbon composite electrodes for energy storage applications; Co-organized a symposium title: Electrode Materials and Electrolytes for Lithium and Sodium-Ion Batteries, Session Chair, MRS Spring Meeting 2016, Phoenix, Arizona, March 27 – April 1, 2016

45. Invited Speaker, Title: 3D Printing of NdFeB Bonded Magnets, TMS 2016 145th Annual Meeting, Nashville, Tennessee, February 17-18, 2016

46. Invited Speaker, Title: Low-cost, high performance anodes for lithium-ion batteries, ORNL SULI Interns, Oak Ridge, Tennessee, February 10, 2016

47. Invited Speaker, Title: Current Status of NdFeB Magnet Printing Research, CMI Magnet Thrust Meeting, San Diego, California, January 11-12, 2016

48. Invited Speaker, Title: Additive Manufacturing of Permanent Magnets, 1st TMS Summit on Integrated Manufacturing and Materials Innovations, Pittsburgh, Pennsylvania, November 17-18, 2015

49. Invited Speaker, Title: Bonded Magnet Research, US – Japan Bilateral Workshop; US – Japan – Europe Trilateral Workshop; Tokyo, Japan, October 26-28, 2015

50. Invited Speaker, Title: Lithium-Ion Batteries, ORNL SULI Interns, Oak Ridge, Tennessee, October 7, 2015

51. Invited Speaker, CMI Annual Meeting, Idaho National Laboratory, Idaho Falls, Idaho, August 4-6, 2015

52. Invited Speaker, Magnet Applications Inc., DuBois, Pennsylvania, July 8, 2015

53. Invited Speaker, RJLee Group Inc., Monroeville, Pennsylvania, June 11-12, 2015

54. Invited Speaker, United Technologies Research Center, Hartford, Connecticut, May 4-5, 2015

55. Invited Speaker, Brown University, CMI Magnet Thrust Meeting, Providence, Rhode Island, May 6-7, 2015

56. Invited Speaker, ACS Spring 2015 Meeting, Denver, Colorado, March 23-25, 2015

57. Invited Keynote Speaker, Rethink Disruption – Emerging Technologies Transforming Business & Society Meeting, San Francisco, California, November 5-6, 2014

58. Invited Speaker, CMI Annual Meeting, Ames, Iowa, September 8-10, 2014

59. Webinar Presentation, Tile: Pyrolytic Carbon Black Composites, YouTube Uploaded, August 7, 2014

60. Invited Speaker, Title: 3D Printing of NdFeB Magnets, GE Global Corporation, CMI Magnet Thrust Meeting, Albany, New York, August 4-6, 2014

61. Invited Speaker, Title: Advancements in Additive Manufacturing, Lawrence Livermore National Laboratory, CMI Magnet Thrust Meeting, Livermore, California, April 7-8, 2014

62. Invited Speaker, Title: Lithium-ion Batteries, SULI Interns, ORNL, Oak Ridge, Tennessee, January 15, 2014

63. Speaker, Title: Investigation of Li-rich High Energy Density Cathodes for Li-ion Batteries, MRS Fall 2013 meeting, Boston, Massachusetts, December 2-5, 2013

64. Invited Speaker, Title: Recovery of Lithium from Geothermal Brine, Simbol Materials Inc., Pleasanton, California, November 21-22, 2013

65. Invited Speaker, Title: Mesoporous TiO_2 Anodes for Lithium-Ion Batteries, SPARK meeting, ORNL, Oak Ridge, Tennessee, November 18, 2013

66. Invited Speaker, Title: TiO_2 Based Safe Lithium-Ion Batteries, Cristal USA, Baltimore, Maryland, October 10-11, 2013

67. Invited Speaker, Title: Additive Manufacturing of Magnets, Ames Laboratory, CMI Kickoff Meeting, Ames, Iowa, September 10-12, 2013

68. Invited Speaker, Title: Novel Solid Electrolytes for Lithium-ion Batteries, The University of Texas at Austin, BES Meeting, Austin, Texas, August 26-27, 2013

69. Invited Speaker, Title: Lithium Extraction Methods, Simbol Materials Inc., Pleasanton, California, July 25-26, 2013

70. Invited Speaker, Title: Investigation of Li-rich High-Energy Density Cathodes, Chaired Sessions, 223rd Electrochemical Society Meeting, Toronto, Canada, May 13-16, 2013

71. Invited Speaker, Title; High Performance Cathode Materials for Lithium-ion Batteries, Lawrence Berkeley National Laboratory, Battery Workshop, Berkeley, California, October 10-11, 2012

72. Invited Speaker, Title: Lithium-ion Batteries, Technical Society of Knoxville, Knoxville, Tennessee, September 18, 2012

73. Invited Speaker, Title: Titanium Oxides Based Safe Batteries, Bren-Tronics Energy Systems, Gainesville, Florida, August 29-30, 2012

74. Invited Speaker, Title: Lithium-ion Batteries, Vellore Institute of Technology, Vellore, India, August 14, 2012

75. Invited Speaker, Title: Fast-charging and Safe Lithium-Ion Batteries, Sandia National Laboratory, Albuquerque, New Mexico, July 9-10, 2012

76. Invited Speaker, Title: TiO_2 Based Lithium-Ion Batteries, LBNL Advanced Light Source, Berkeley, California, May 1-2, 2012

77. Invited Speaker, Title: Advanced Anode Materials for Lithium-ion Batteries, Bren-Tronics Energy System, Alachua, Florida, December 8-9, 2011

78. Speaker, Two Oral Presentations, Title: Controlled surface modification of $LiMn_{1.5}Ni_{0.5}O_4$ spinel cathode materials for Lithium-ion batteries; Mesoporous TiO_2 sphere with nitrogen adsorption for lithium-ion batteries, 220th ECS Fall Meeting, Boston, Massachusetts, October 12-13, 2011

79. Invited Speaker, Title: Flexible Silicon Solar Photovoltaics, Ferro Corporation, Cleveland, Ohio, February 23-24, 2011

80. Speaker, Title: Single Crystalline Si Photovoltaics on Flexible Copper Substrates, MRS Fall Meeting 2010, Boston, Massachusetts, November 28 – December 1, 2010

81. Speaker, Co-organizing a Symposium, Title: High Temperature Superconductor Wires and Tapes, MS&T 2010, Houston, Texas, October 18-20, 2010

82. Invited Speaker, Title: Flexible Si Thin Films, Ascent Solar, Denver, Colorado, April 20-21, 2010

83. Invited Speaker, Title: Growth of textured Si thin films on RABiTS, National Renewable Energy Laboratory, Ampulse Meeting, Denver, Colorado, April 21-22, 2010

Total Number of Patents and Inventions of Paranthaman: 82
Issued U.S. Patents (49)**; Published U.S. Patent Applications** (23)**;**
Invention Disclosure Elected to File/Filed (10)

List of Issued U.S. Patents (49)

1. **M. P. Paranthaman**, M. A. McGuire, D. S. Parker, O. Rios, B. C. Sales, H. Ucar, S. K. McCall, R. W. McCallum, and C. I. Nlebedim, "Neodymium-iron-boron magnet with selective surface modification, and method of producing same," U.S. Patent # 10,586,640, Issued on March 10, 2020.

2. A. K. Naskar, **M. P. Paranthaman**, M. Boota, and Y. Gogotsi, "Flexible and Conductive Tire-derived Carbon/Polymer Paper as Pseudocapacitive Electrode," U.S. Patent # 10,460,881; Issued on October 29, 2019.

3. Y. Li, **M. P. Paranthaman**, A. K. Naskar, and K. M. Akato, "Carbon-metal Oxide Composite Materials and Their Use in Anodes of Lithium and Sodium ion Batteries," U.S. Patent # 10,355,268; Issued on July 16, 2019.

4. A. K. Naskar, and **M. P. Paranthaman**, "Pyrolytic Carbon Black Composite and Method of Making the Same," U.S. Patent # 10,320,000; Issued on June 11, 2019.

5. **M. P. Paranthaman**, R. Bhave, B. A. Moyer, S. Harrison, "Composition for Recovery of Lithium from Brines, and Process of Using Said Compositions," U.S. Patent # 10,266,915; Issued on April 23, 2019.

6. M. Z. Hu, J. T. Simpson, T. Aytug, **M. P. Paranthaman**, and M. R. Sturgeon, "Super-Surface Selective Nanomembranes Providing Simultaneous High Permeation Flux and High Selectivity," U. S. Patent # 10,179,313, Issued on January 15, 2019.

7. **M. P. Paranthaman**, C. A. Bridges, S. Yoon, "Surface Modifications for Electrode Compositions and Their Methods of Making," US Patent # 10,128,489, Issued Nov 13, 2018.

8. C. A. Bridges, **M. P. Paranthaman**, G. Veith, Z. Bi, "Nitride- and Oxide-modified electrode compositions and methods of make," U.S. Patent # 10,044,038, Issued on August 7, 2018**.**

9. **M.P. Paranthaman**, C.A. Bridges, S. Yoon, X.-G. Sun, S. Dai, "Coating compositions for electrode compositions and their methods of making, U.S. Patent # 10,020,493, Issued on July 10, 2018.

10. G.M. Brown, **M.P. Paranthaman**, S. Dai, X-G. Sun, H. Liu, "High Energy Density Aluminum Battery", U.S. Patent # 9,997,802 B2, Issued on June 12, 2018.

11. A.K. Naskar, **M.P. Paranthaman**, M. Boota, Y. Gogotsi**, "**Flexible and Conductive Waste Tire-Derived Carbon/Polymer Composite Paper as Pseudocapacitive Electrode", U.S. Patent # 9,941,058 B2, Issued on April 10, 2018.

12. Z.D. Hood, S.P. Adhikari, M.W. Wright, A. Lachgar, Y. Li, A.K. Naskar, **M.P. Paranthaman**, "Surface Treated Carbon Catalysts Produced from Waste Tires for Fatty Acids to Biofuel Conversion, U.S. Patent No. 9,884,804, Issued on February 6, 2018

13. T. Aytug, **M.P. Paranthaman**, J.T. Simpson, D.F. Bogorin, "Superhydrophobic films and methods for making superhydrophobic films", U.S. Patent # 9,771,656, Issued on September 26, 2017.

14. B.L. Armstrong, T. Aytug, **M.P. Paranthaman**, J.T. Simpson, D.A. Hillesheim, N.E. Trammell, "Optically transparent, superhydrophobic, biocompatible thin film coatings and methods for producing same, U.S. Patent # 9,752,049, Issued on September 5, 2017.

15. **M. P. Paranthaman**, Zhonghe Bi, Craig A. Bridges, and Gilbert M. Brown, "Mesoporous metal oxide microsphere electrode compositions and their methods of making," U.S. Patent # 9,620,783, Issued on April 11, 2017.

16. **M. P. Paranthaman**, H. Liu, G. M. Brown, X. G. Sun, Z. Bi, "Mesoporous metal oxide microsphere electrode compositions and their methods of making, " U.S. Patent # 9,515,318, Issued on December 6, 2016.

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