

# Curriculum Vitae

## Prof Vijayaraghavan M Chariar

Professor  
Centre for Rural Development & Technology  
Indian Institute of Technology Delhi  
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### Positions

2017 - Present	Professor, Centre for Rural Dev & Tech, Indian Inst of Technology Delhi, New Delhi, India
2010 - 2016	Associate Professor, Centre for Rural Dev & Tech, Indian Institute of Technology Delhi, New Delhi, India
2005 - 2010	Assistant Professor, Centre for Rural Dev & Tech, Indian Institute of Technology Delhi, New Delhi, India
2002 - 2004	Assistant Professor, Department of Humanities & Social Sci, Indian Institute of Technology, Kharagpur, India
2000 - 2002	Lecturer, Physics Group Birla Institute of Technology & Science, Pilani, India
1999 - 2000	Post-Doctoral Fellow, History & Philosophy of Science Division, NISTADS, New Delhi, India

### Advisory Positions

2013 - Present	Hon Chairman, Ekam Eco Solutions Pvt Ltd IIT Delhi Partnered Enterprise <a href="https://www.ekameco.com">https://www.ekameco.com</a>
2015 - Present	Senior Sustainability Scientist Arizona State University, USA

## **Awards, Honours & Recognitions**

Titan Design Impact Award for Zerodor Waterless Urinals, 2020

Grand Jury Member, FICCI India Sanitation Coalition Awards, 2017

Adjunct Faculty, GIOS, Arizona State University, 2017

Top 25 Innovative Startups by IIT Delhi Alumni Association, 2015

NextBig100 Company Award for Ekam Eco Solutions from The Hay Group , 2015

Senior Sustainability Fellow, GIOS, Arizona State University, 2015-2020

Member, National Task Force Rural Housing, Ministry of Rural Dev, GoI, 2014-19

Millennium Alliance Award 2014 instituted by FICCI, USAID, Govt of India

DST Lockheed Martin India Innovates Growth Programme Award 2014

PEER Science Awardee, National Academy of Sciences & USAID, 2013

Member, Global Phosphorous Research Network 2012-17 at Arizona State University

Fulbright Senior Scholar, Arizona State University, USA, 2012

Teaching Excellence Award, Indian Institute of Technology Delhi, 2011

Member, Committee on Rural Housing, Ministry of Rural Dev, GoI 2011-15

Member, Innovation Council, Min of Drinking Water & Sanitation, GoI 2010-15

Jury Member, Manthan Digital Empowerment Awards, 2008

KVIC Golden Jubilee Award for Rural Industrialization Innovations, 2007

Research Associate, Council of Scientific and Industrial Research, Govt of India, 1998

Young Scientist Award, Forum of Scientists for Peace & Development, 1997

## Education

1999	PhD	Experimental Materials Science <i>Committee - T C Goel, R G Mendiratta, D Ganguli</i>	IIT Delhi
1993	MTech	Solid State Materials <i>Committee - P K C Pillai, T C Goel, Amitabh Jain</i>	IIT Delhi
1991	MSc	Physics <i>Advisor - S M Bharathi</i>	IIT Bombay
1989	BSc	Physics	Univ of Bombay

## Research Projects & Consultancy Grants

Developing & Delivering Course on “Social Entrepreneurship” for Technology Leaders Programme, Plaksha University, Mohali, 2022  
CI Vijayaraghavan M **Chariar**, IIT Delhi

Developing & Delivering Course on “Social Entrepreneurship” for Technology Leaders Programme, Reimagining Higher Education Foundation, Gurgaon, 2021  
CI Vijayaraghavan M **Chariar**, IIT Delhi

Fecal Sludge and Urine Reuse in Agriculture – Opportunities for addressing Phosphorus needs in India *PEER Science Project* (INR 70 Lakhs)  
NSF-USAID : Sep 2013 to May 2017.  
PI Vijayaraghavan M **Chariar**, IIT Delhi with partner Dr Pay Drechsel, IWMI Colombo

Co-Creating WatSan Courses and providing collaborative learning opportunities for ASU & IIT Delhi Students (INR 10.50 Lakhs)  
National Collegiate Inventors & Innovators Alliance, USA : Mar 2013 to May 2017  
PI Vijayaraghavan M **Chariar**, IIT Delhi with partner Mark Henderson, ASU

Setting up a Knowledge Network on Rural Housing (INR 4.17 Crores)  
Ministry of Rural Development, Govt of India : May 2011 to March 2017  
PI Vijayaraghavan M **Chariar** with Co PI Jyoti Kumar, IDDC, IIT Delhi

Involving Students & Youth and Creation of Knowledge Sharing Platforms for the Campaign Take Poo to the Loo (INR 16 Lakhs)  
UNICEF India Office, New Delhi : Nov 2013 to Feb 2014  
PI Vijayaraghavan M **Chariar**

Development of Comprehensive Handbook for Ecosan Systems (INR 9.50 Lakhs)  
UNICEF, New Delhi : Aug 2010 - Aug 2011  
PI Vijayaraghavan M **Chariar**

Design of Innovative Closed-Loop Ecological Sanitation Solutions and their Techno-economic Evaluation (INR 20 Lakhs)  
UNICEF, New Delhi : Mar 2010 - Sep 2011  
PI Vijayaraghavan M **Chariar** with Co-PI Prof L K Das (IDDC)

Mahatma Gandhi Inst for Rural Industrialisation Tech Interface with IITD (INR 60 Lakhs)  
Khadi & Village Industries Commission, Govt of India : July 2009 - July 2012  
Co PI Vijayaraghavan M **Chariar** with PI Prof M R Ravi (ME) and others

National Agricultural Innovation Programme Bamboo Project (INR 2 Crores)  
ICAR & World Bank : Apr 2006 – Mar 2011  
Core Group Team Member V M **Chariar** with PI Prof P Sudhakar

Development of a Technology Package to Facilitate Production of Bamboo Based Laminates and Value-added Multi Craft Products (INR 20 Lakhs)  
IIT Delhi : 2006 – 2008  
Co PI Vijayaraghavan M **Chariar** with PI Prof R R Gaur (ME) and others

Developing MDI : Bamboo Composite Laminates (INR 15 Lakhs)  
National Mission on Bamboo Applications, Govt of India : Mar 2010 – May 2011  
PI Vijayaraghavan M **Chariar** with Co PI Dr P Sudhakar and Mr Vipin Sharma

Development of Novel Concept of Engineered Bamboo Structural Elements with Limited Weldability Features (INR 21 Lakhs)  
Department of Science and Technology, Govt of India : Apr 2008 – May 2011  
PI Vijayaraghavan M **Chariar** with Co PI Dr P Sudhakar and Dr Naresh Bhatnagar

Design, Development, Pilot Testing of Waterless Urinals (INR 5 Lakhs)  
UNICEF India Office, New Delhi : Oct 2008 – Mar 2010  
PI Vijayaraghavan M **Chariar** with Co PI Dr L K Das

Setting up Waterless Urinals at Delhi Parks & Gardens, Delhi Govt (INR 1 Lakh)  
Delhi Parks and Gardens Society. Govt of Delhi : Aug 2014 to Sep 2014  
CI V M **Chariar**

Assessment of alternative technologies for waste management to be used by urban local bodies (INR 6.42 Lakhs)  
ICRA Management Consulting Services Pvt Ltd, Noida : Oct 2010 to March 2011  
CI V M **Chariar**

Market Survey of Artisanal Products and Craft Items for CAPART at Rajiv Gandhi Bhawan (CP) Outlet in New Delhi (INR 70,000)  
CAPART : Jul 2008 – Sep 2008  
CI V M **Chariar**

Documentation of indigenous iron smelting technology of Agarias,  
ISIRD IIT Kharagpur : Jan 2003-Jan 2004  
CI V M **Chariar**

# Research Publications

## *Journal Publications*

1. "Potential utilization of Areca Sheath waste as livestock fodder resources: A Review." K M Prasannakumaran, J K Sahu, *V M Chariar*, Natural Resources Forum (2023) (Under Review)
2. Global Trends and Future Research in the Sanitation Entrepreneurial Ecosystem: A Bibliometric and Content Analysis, Shivani, *V M Chariar*, International Journal of Consumer Studies (2023) (Under Review)
3. Evaluation of Machine Learning Approaches for the Accurate Detection of Depression, Anxiety, and Stress (DAS) Disorders, C M Sharma, Anjolie Jain & *V M Chariar*, Journal of Affective Disorders (2023) (Under Review)
4. Biocenosis : a novel framework for sustainability assessment of built environment in the Indian context, *P Kumar, V M Chariar, C Kabre* , *Sādhanā*, 48(1), 12, January 2023.
5. Sustainable Technical Debt-Aware Computing Model for Virtual Machine Migration (TD4VM) in IaaS Cloud, *A Vashistha, Chandra Mani Sharma, RP Mahapatra, V M Chariar, N Sharma*, J. Wireless Communications and Mobile Computing, vol. 2022, Article ID 6709797, 12 pages, April 2022
6. Lung Disease Classification in CXR Images using Hybrid Inception-ResNet-v2 Model and Edge Computing, *Chandra Mani Sharma, Lakshay Goyal, V M Chariar, N Sharma* , J. Healthcare Engineering, 2022
7. Learning from Habitat Reconstruction Initiatives – New Approach for Reducing Vulnerability of Rural Housing in India, *M C Anand, T Sinsupan, S Madurapperuma, V M Chariar*, Sustainability, 14(7), pp.4359, (2022)
8. Recovery of phosphorus from stored urine using continuous flow reactor in decentralised level operations, *S. Ramesh Sakthivel, Md Azizur Rahman, V. Ganesh Prabhu, V M Chariar*, Blue-Green Systems, Vol 2, Issue 1, p. 237-249, (2020)
9. Performance evaluation of a low-cost odour trap installed in waterless urinals, *S. Ramesh Sakthivel, Md Azizur Rahman, V. Ganesh Prabhu, V M Chariar*, Journal of Water Sanitation and Hygiene for Development, Vol 6, Issue 1, 2016.
10. Process Optimization for Sequential Recovery of N, P, K from Human Urine, *Md Azizur Rahman, Ramesh Sakthivel, V M Chariar*, South Asian Journal of Experimental Biology, Vol 5 (6), p. 205-221, 2015.
11. Optimizing Hydrolysis of Urea from Human Urine and Comparing Efficacy of Different Experimental Designs, *Md Azizur Rahman\**, Vijayaraghavan M **Chariar**, Intl. Journal of Environmental Sciences, In Press (2015).
12. Study of Acceptance of Human Urine by Indian Farmers as Soil Conditioner and Water Source, *Azizur Rahman\**, V M **Chariar**, Intl. Journal of Tropical Agriculture, Vol. 33, No 2, Part 4, 1537 - 1548 (2015).
13. Techno-economic Assessment of EcoSan Inspired Technologies for Recovery of Nutrients from Human Urine, *Md Azizur Rahman\**, S Ramesh Sakthivel\*, V M **Chariar**, Intl. Journal of Environmental Sciences, Vol 3, Issue 4, (2015), 205-220.

14. A Validated Citizen-Centric Approach using Delphi Technique For Converging Indigenous Knowledge Systems using ICT", Charru Malhotra, V M Chariar, L K Das, International Journal of e-Government Research (IJEGR), Issue 4, 2014. IGI publications, USA; ISSN:1548-3886, EISSN:1548-389
15. Impact of fire on Dendrocalamus strictus - a natural green composite building material, Naresh Kr Sharma, Vijayaraghavan M **Chariar** and Rajendra Prasad, Journal of Indoor and Built Environment, Vol. 24, No. 6, 740-745, 2014.
16. Eco-friendly Flame Retardant Treatments for Cellulosic Green Building Materials, Naresh Kr Sharma\*, C S Verma, Vijayaraghavan M **Chariar** and Rajendra Prasad, Journal of Indoor and Built Environment, Sage USA, Vol. 24, No. 3, 422-432, 2015.
17. Comparative Study of Mechanical Properties of Bamboo Laminae and their Laminates with Woods and Wood based Composites. C S Verma, Naresh Kr Sharma, V M **Chariar**, S Maheshwari, M K Hada. Journal of Composites Part: B, Engineering, Vol 60, April 2014, pp 523-530
18. Stiffness and strength analysis of four layered laminate bamboo composite at macroscopic scale, C S Verma, V M **Chariar**, Composites Part B, Vol 45, Issue 1, February 2013, pp 369-376
19. Study of some mechanical properties of bamboo laminae, C S Verma, V M **Chariar**, International Journal of Metallurgical & Material Science and Engineering, Vol. 2, Issue 2, June 2012, pp 20-37.
20. Macro mechanical analysis of bamboo lamina, C S Verma\*, V M **Chariar**, R Purohit, International Journal of Chemical and Petrochemical Technology, Vol. 2, Issue 2, June 2012, pp 1-11.
21. Development of layered laminate bamboo composite and their mechanical properties, C S Verma\*, V M **Chariar**, Composites Part B: Volume 43, Issue 3, April 2012, p.1063-1069.
22. Tensile Strength Analysis of bamboo and Layered Laminate Bamboo composites, C S Verma, V M **Chariar**, R Purohit, International Journal of Engineering Research and Applications, Vol. 2, Issue 2, pp.1253-1264, Mar-Apr 2012. [% = 40]
23. Cleavage analysis of Bamboo : A natural composite, C S Verma, V M **Chariar**, R Purohit, International Journal of Engineering Research and Applications, Vol. 2, Issue 2, Mar-Apr 2012, pp.1265-1268.
24. User Centred Design Model (G2C2G) for Rural e-Governance Projects, Charru Malhotra, Vijayaraghavan M. **Chariar**, Lalit K. Das, International Journal of Electronic Governance, Vol 2, Number 4, 2009, p. 378-401.
25. Tikamgarh ke Talaab, Krishna Gandhi, Sunanda Kirtane, V M **Chariar**, Jignasa, IIT Delhi, Vol 19, 2005, p. 61 to 65. (Indian Language Hindi Publication)
26. Structural and electrical characterization of sol-gel processed PLZT thin films, Vijayaraghavan **Chariar**, T.C. Goel & R.G. Mendiratta, IEEE Trans. on Dielectrics and Electrical Insulation, Vol. 6, 1999, p. 65.
27. Characterization of transparent polyimide: PLZT composites prepared by a modified sol-gel method, Vijayaraghavan **Chariar**, A.K. Tripathi, T.C. Goel, R.G. Mendiratta, P.K.C. Pillai & K. Dutta, Ferroelectrics, Vol. 185, 1996, p. 117. [

28. Effect of addition of Zn on the electronic conduction properties of semiconducting  $\text{Se}_{80-x}\text{Te}_{20}\text{Zn}_x$  glasses, R.S. Kundu, K.L. Bhatia, N. Kishore, P. Singh & Vijayaraghavan **Chariar**, *Phil. Mag. B*, Vol. 72, 5, 1995, p. 513.
29. Preparation and characterization of spray pyrolysed  $\text{BaTiO}_3$  thin films, A.K. Tripathi, Vijayaraghavan **Chariar**, T.C. Goel & P.K.C. Pillai, *Materials Science and Engineering B*, Vol. 25, 1994, p. 34.
30. Dielectric and pyroelectric properties of Gadolinium doped PZT, H.D. Sharma, A. K. Tripathi, Vijayaraghavan **Chariar**, T.C. Goel & P.K.C. Pillai, *Materials Science and Engineering B*, Vol. 25, 1994, p. 29.

## ***Patents***

1. Indian Patent Application entitled "Integrated Arrangement of Bathing station cum Urine Separation Toilet for Space Saving and Resource Conservation" **V M Chariar** & Amruta Khairnar (In Process).
2. Indian Patent Application entitled "Sensor based non-invasive system and method for cortisol level measurement" **V M Chariar** & Chandramani Sharma, (In Process)
3. Indian Patent Application entitled "A system facilitating Health Monitoring & a Method Thereof" **V M Chariar**, Chandra Mani Sharma & Kapil Tomar, Indian Patent Application No 202111049455 filed on 28 October 2021.
4. Indian Patent Application entitled "Mobile System for Processing Organic Waste Matter" **V M Chariar** & Amruta Khairnar, Application No 202111042002 Temp/E-1/47369/2021-DEL filed on 16 September 2021.
5. Indian Patent Application entitled "A device for the removal and recovery of ammonium and phosphate ions from aqueous solutions, and method of preparation thereof", **V M Chariar** & Md Azizur Rahman, Application No 201811039657A Filed on 19-10-2018 & Published on 24-04-2020.
6. Indian Patent Application entitled "An apparatus for the treatment of Bamboo" **V M Chariar** & Naresh Kr Sharma, Application No 201811039658A Filed on 19-10-2018 & Published on 24-04-2020
7. Indian Patent entitled "Novel Toilet Design for separation of urine from faeces" **V M Chariar** and S Ramesh Sakthivel (2012), Indian Patent No.: 342247 granted on 22 July 2020. Indian Patent Application No. 625/DEL/2013
8. Indian Patent entitled "An odour prevention device" **V M Chariar** and S Ramesh Sakthivel (2010), Indian Patent No 352065 granted on 24 November 2020. Indian Patent application 60/DEL/2010.

## ***Conference Publications***

1. Leveraging circular business models to promote sustainable sanitation: A review of Indian policy and entrepreneurship, *Shivani, Prasannakumaran K M, V M Chariar*, 4<sup>th</sup> International Conference on Waste Management 2023, IIT Guwahati, May 2023.

2. Areca sheath waste : Underutilised entrepreneurial resources, *Prasannakumaran K M, J K Sahu & V M Chariar*, 4<sup>th</sup> International Conference on Waste Management 2023, IIT Guwahati, May 2023.
3. Indian Sign Language Recognition Using Fine-tuned Deep Transfer Learning Model Procc. of International Conference on Innovations in Computer and Information Science (ICICIS 2021, Jiangxi China) *Chandra Mani Sharma, Kapil Tomar, Ram Krishn Mishra, V M Chariar*. pp 62-67, 2021.
4. Classification of Forecasting methods on the basis of Structure, *Sugandh Malhotra, L K Das and V M Chariar*, The Third International Conference on Design Creativity, Bangalore, India, 12-14 January 2015.
5. Design Research Methods for Future Mapping, *Sugandh Malhotra, L K Das and V M Chariar*, Sustainability, Technology and Education Conference (STE 2014), Taiwan, 10-12 December, 2014.
6. Plotting against vulnerability - Reflections on the state provision of homestead sites for rural poor in India, *Mona Chhabra Anand and V M Chariar*, The Human Security : Humanitarian Perspectives and Responses Conference, Kadir Has University, Istanbul, Turkey, 24-27 October 2013.
7. Standardisation of Design and Maintenance of DEWATS Plants in India, *S R Sakthivel, A Seshadri, Md Azizur Rahman, V M Chariar*. IWA Conference on Decentralised Wastewater Management (DEWATS) in Asia, Nagpur, India, 20-22 November 2012.
8. Eliciting Citizens' Participation for Incorporating Contextual Factors in Rural e-Governance Initiative, *Charru Malhotra, V M Chariar, L K Das and Girija Krishnaswamy*. ACIS 2011 Proceedings, Paper 23, 2011.
9. Cost effective urinals for schools, institutions and public places, *S Ramesh Sakthivel, Md Azizur Rahman and V M Chariar*, Summit on Sustainable Habitat -Incorporating 3rd International Conference on Modern Bamboo Structures, New Delhi, December 9 - 11, 2011.
10. Decision support in available urine harvesting technologies: technical and economical analysis, *Md Azizur Rahman, S Ramesh Sakthivel and V M Chariar*, Summit on Sustainable Habitat - Incorporating 3rd International Conference on Modern Bamboo Structures, New Delhi, December 9 - 11, 2011.
11. Halogen Free treatment procedure for imparting fire retardant to Bamboo, *Naresh Kr Sharma, Sanjay Kumar and V M Chariar*, Summit on Sustainable Habitat - Incorporating 3rd International Conference on Modern Bamboo Structures, New Delhi, December 9 - 11, 2011.
12. Engineered Bamboo Structural Elements for Housing, *Sanjay Kumar, Naresh Kr Sharma and V M Chariar*, Summit on Sustainable Habitat - Incorporating 3rd International Conference on Modern Bamboo Structures, New Delhi, December 9 - 11, 2011.
13. Waterless urinals for sustainable resource and environmental management, *VM Chariar and S Ramesh Sakthivel*, International conference on Water Harvesting, Storage and Conservation, IIT Kanpur, November 23rd - 25th, 2009.



14. Performance Comparison of Odour Traps used in Waterless Urinals, *V M Chariar and S Ramesh Sakthivel*, National Workshop on Solid and Liquid Waste Management, Thiruvananthapuram, Kerala, July 31 - August 1, 2009.
15. Leveraging Technologies for Rural Development : A Case Study of Nemmadi Centres in the villages of Karnataka, *Charru Malhotra, V M Chariar, L K Das*, 12th National Conference on e-Governance, Goa, February 12-13, 2009.
16. In vitro effects of aqueous extract of neem leaves (*Azadirachta indica*) on the larval motility of *Haemonchus contortus*, *R Gopinath, V M Chariar, S Satya, L N Mathuram, S Ramesh, S Gomathinayagam*, International Summit on Advancing Veterinary Medical Care : Challenges and Strategies, TANUVAS, Chennai, February 19 - 21, 2009.
17. A need for validating ethnoveterinary medicines, *R Gopinath, V M Chariar, S Satya*, National Seminar on Rural India Developmental Alternatives : Sectoral Convergence for Livelihood Security, CIRG, Mathura, January 16 - 19, 2009.
18. Fabrication and testing of various configurations of Engineered Bamboo Structural Elements for deployment as columns and beams, *Sanjay Kumar, S Ramesh Sakthivel, V M Chariar and P Sudhakar*, 6th International Engineering and Construction Conference (IECC6), organised by American Society of Civil Engineers, Cairo, Egypt, June 28-30, 2010.
19. ICT as a Tool for Social & Economic Empowerment of Rural Communities, *Charru Malhotra, V M Chariar, L K Das*, ICONECS-2007 in panel titled "Livelihood, Rural Development & Governance" organised by Digital Empowerment Foundation, New Delhi on 22 September, 2007.
20. Participatory Approach in design of e-Governance for Rural Development in India, *Charru Malhotra, V M Chariar, L K Das*, Asian Regional Training Seminar on e-Government, Organised by Nationale' d'Administration (ENA), Paris and Indian Institute of Public Administration (IIPA), New Delhi, March 14 - 16, 2007.
21. An Evaluatory Framework For ICT Interventions In the Rural Areas: Review of Literature on E-Governance For Rural Development In The Indian Context, 22. International Conference on Electronic Governance (ICEG2007) in December 2007, *Charru Malhotra, V M Chariar, L K Das, and P V Ilavarasan* Republished in the book titled "Adopting e-Governance" edited by G P Sahu, GIFT Publishing, New Delhi, p. 216-226, 2007.
23. Revitalisation of indigenous iron industry, in Recommendations for Rural Technologies-A Report prepared for CAPART, Ed *Vijayaraghavan Chariar*, Publication of 3rd Congress on Traditional Sciences and Technologies of India, Varanasi, Published by PPST Foundation, p. 54, 2000.
24. Ferroelectric thin films: Ceramics and Composites, *Vijayaraghavan Chariar, A.K. Tripathi, T.C. Goel and R.G. Mendiratta*, International Conference on Smart Materials, Structures and Systems (in conjunction with the 9th National Seminar on Aerospace Structures) at IISc Bangalore pp. 65-72, July 7 - 10, 1999.
25. Traditional Technologies and their potential for wealth generation, *D. Narasimha Reddy and Vijayaraghavan Chariar*, Book of Abstracts, 1st Regional Congress on Traditional Sciences and Technologies of AP, Chirala, AP, June 2 - 4, 1999.

26. Electrical and structural characterization of thin films of La-modified PZT prepared by a sol-gel technique, *Vijayaraghavan Chariar, P.K.C. Pillai, T.C. Goel and R.G. Mendiratta*, SPIE symposium on Smart Materials, Structures and MEMS held at IISc Bangalore, December 11 - 13, 1996.
27. Structural and electrical characterization of films of La-modified Pb (ZrxTi1-x) O3 Prepared by a sol-gel method, *Vijayaraghavan Chariar, T.C. Goel, P.K.C. Pillai and R.G. Mendiratta*, 9th International Symposium on Electrets (ISE-9) held at Shanghai, September 1996.
28. Characterization of transparent polyimide: PLZT composites prepared by a modified sol-gel method, *Vijayaraghavan Chariar, A.K. Tripathi, T.C. Goel, R.G. Mendiratta, P.K.C. Pillai and K. Dutta*, 8th European Meeting on Ferroelectricity (EMF-8) held at University of Nijmegen, Netherlands, July 4 - 8 1995.
29. Thermally stimulated discharge current studies in a polymethyl methacrylate-polystyrene blend, *A. Verma, A.K. Tripathi, Vijayaraghavan Chariar, T.C. Goel and P.K.C. Pillai*, 8th International Symposium on Electrets (ISE-8) held at Paris, September 7 - 9, 1994.
30. Preparation of BaTiO3 electroceramics by wet chemical methods, *Vijayaraghavan Chariar, A.K. Tripathi, A. Verma, T.C. Goel, R.G. Mendiratta and P.K.C. Pillai*, National Seminar on Materials for Marine applications held at Naval Chemical and Metallurgical Laboratory, Bombay, March 3 - 4, 1994.
31. Pyroelectric studies on spray-pyrolysed PVC-BaTiO3 composites, *Vijayaraghavan Chariar, A.K. Tripathi, T.C. Goel and P.K.C. Pillai*, Seventh National Symposium on Ferroelectrics and Dielectrics, HNB Garhwal University, Srinagar, October 3 - 5, 1992.

## ***Books and Special Issue***

1. Traditional Knowledge Systems, Vasudhaiva Kutumbakam, New Delhi, Ed. Vijayaraghavan M **Chariar**, (2015).
2. Ecological Sanitation : Practitioner's Handbook, S Ramesh Sakthivel and **V M Chariar**, Ministry of Rural Development, Government of India, (2011).
3. Waterless Urinals : A Resource Book, **V M Chariar** and S Ramesh Sakthivel, IIT Delhi, (2010).
4. Discourses on Aging and Dying, Sage Publishers, New Delhi . Eds S C Chatterjee, P Patnaik and **V M Chariar** (2008).
5. Book of Abstracts and e-Proceedings of the National Conference on Traditional Knowledge Systems of India, IIT Kharagpur, Eds. **Vijayaraghavan M Chariar**, V N Giri, P Patnaik, (2004).
6. Recommendations for Rural Technologies, Eds. Navjyoti Singh and **Vijayaraghavan Chariar**, A report prepared for CAPART, PPST Foundation (2000)

7. Book of Abstracts of the 2<sup>nd</sup> Regional Congress on Traditional Sciences and Technologies of Bundelkhand, Orchha, PPST Foundation, Eds. Navjyoti Singh, Arun Kumar and **Vijayaraghavan Chariar** (1999).

8. Book of Abstracts of the 1<sup>st</sup> Regional Congress on Traditional Sciences and Technologies of AP, Chirala, PPST Foundation, Eds. **Vijayaraghavan Chariar** and D. Narasimha Reddy (1999).

9. Summing Up Report of the 3<sup>rd</sup> Congress of Traditional Sciences and Technologies of India, Varanasi, PPST Foundation, Eds. **Vijayaraghavan Chariar** and Parmita (1998).

10. Book of Abstracts of the 3<sup>rd</sup> Congress of Traditional Sciences and Technologies of India, Varanasi, PPST Foundation, Eds. **Vijayaraghavan Chariar**, Tenzin Rigzin and Navjyoti Singh (1998).

## ***Book Chapters***

1. Machine Learning Models for Early Diagnosis of Depressive Mental Affliction", *C M Sharma, Rahul Krishnamoorthy & V M Chariar*, in "Concepts of Artificial Intelligence and its Application in Modern Healthcare Systems" CRC Press, Taylor & Francis (2023).

2. Metagenomics - An Approach for Selection of Oil Degrading Microbes and its Application in Remediation of Oil Pollution, *Md Azizur Rahman & V M Chariar* in "Advances in Oil-Water Separation" Eds. P Das, S Manna & J K Pandey. Elsevier 2022.

3. Making ICT more Meaningful for Governance in the Rural Areas: Role of the Community Knowledge Systems, *Charru Malhotra, V M Chariar, L K Das* In "E-Government Development and Diffusion: Inhibitors and Facilitators of Digital Democracy" Eds. G. P. Sahu, Y K. Dwivedi and V Weerakkody, IGI Global, NY. (2009)

4. Rejuvenating Traditional Knowledge Systems of India, *V M Chariar* in "Science, Religion and Development – Advancing the Discourse" Eds Amitabh Kundu and Mariam Tai, Institute for Global Studies in Prosperity, (2006)

## **Teaching**

### ***Online Certificate Courses***

- o "Design Thinking & Innovation" : Designed, Developed and Coordinated Course which is being offered by the Continuing Education Programme, IIT Delhi. 4 Editions of this online course have been launched successfully for industry professionals.

### ***Post Graduate Courses***

- o RDL780 Rural Innovation and Entrepreneurship (IITD) – I have developed this new course as an elective course for UG and Pg students at IIT Delhi. Objectives of the course include providing learners with insights about the interplay of technology,

design and business elements in the domain of rural innovation and entrepreneurship, empowering exploration of pathways to deliver value-added products, services and systems for rural communities, promoting frugal innovation, design thinking & entrepreneurship mindset resulting in business models that are appropriate to the rural context & providing the set of skills essential to launch, sustain and scale rural enterprises

- o RDL730 Technology Alternatives for Rural Development (IITD) – I have been awarded the Teaching Excellence Award by Indian Institute of Technology in the Year 2011 for this course. This immersive and experiential course offered by me is one of the most popular open elective courses at IIT Delhi. Contents of the course include appropriate technologies in areas of water management, small manufacture, sanitation and agriculture.
- o VEL710 Traditional Knowledge and Values (IITD) – I have developed this course and have offered it on over 10 occasions at IIT Delhi. This is also one of the most popular open electives at IIT Delhi. Emerged out of course “Indian Traditions of Science and Technology” which I designed, created and taught at BITS Pilani. Contents of the course include traditional and vernacular technologies with respect to ayurveda, house building, agriculture, logic and philosophy.
- o RDL710 Rural India and Planning for Development (IITD) – I have developed the contents of this course and have offered it for four semesters at IIT Delhi. Contents include decentralized planning, grassroot institutions, participatory approach to development, resource management etc.
- o NEN100 Professional Ethics & Social Responsibility (IITD) – This course offered by the Values Centre at IIT Delhi had its origins in a Values Orientation Programme for incoming undergraduate freshers. I was one of the core group members involved in design and delivery of the Values Orientation Programme. I have taught this multi section course for 2 years and my section was one of the most popular on account of the immersive, experiential pedagogical style adopted by me.
- o Business Ethics (IIT KGP) – Taught this case-studies based course for one semester at IIT Kharagpur.
- o Society, Science and Technology (IIT KGP) – One of the mandatory Pre-PhD Courses at IIT Kharagpur which was taken by research scholars from various engineering disciplines.
- o History of Science and Technology (IIT KGP) – One of the mandatory Pre-PhD Courses at IIT Kharagpur which was taken by research scholars from various engineering disciplines.

### ***Under Graduate Courses***

- o Design for the Developing World (Arizona State University) Co-Taught this course at ASU Polytechnic College of Technology and Innovation with Prof Mark Henderson between August and December 2012.

- o Science and Humanism (IIT Delhi, with Prof R R Gaur and Prof M R Ravi) – Joined the team of Prof R R Gaur and Prof M R Ravi to offer this course originally developed by Prof P L Dhar and Prof R R Gaur at IIT Delhi. This has been one of the first courses on alternative technologies and worldview at IIT Delhi between 1980 and 2010. I co-taught this on 4 occasions between 2005 and 2010.
- o Science and Humanism (IIT Kharagpur) – Created and offered this course which introduced principles of sustainability at IIT Kharagpur for 2 semesters.
- o Indian Traditions of Science & Technology (BITS Pilani) – Created and offered this course on Indigenous Knowledge of Native Indian Communities, Ecological Knowledge, Biodiversity and Resource Management. Was offered only once between 2002 and 2004 at BITS Pilani.
- o Structure & Properties of Materials (BITS Pilani) – Standard 2<sup>nd</sup> Year course on Materials Science at BITS Pilani. Offered this for four semesters between 2002 and 2004.
- o Engineering Thermodynamics (BITS Pilani) - Standard 2<sup>nd</sup> Year course on Engineering Thermodynamics at BITS Pilani. Offered this for four semesters between 2002 and 2004.
- o Physics-I (BITS Pilani) – Foundation Course on Classical Physics for students of 1<sup>st</sup> Year Engineering at BITS Pilani. Offered course twice between 2002 and 2004.
- o Instrumental Methods of Analysis (BITS Pilani) – Experimental Methods Course for 4<sup>th</sup> year Engg / MS students at BITS Pilani. Offered course twice between 2002 and 2004.
- o Measurement Techniques-I (BITS Pilani) – Elementary Experimental Methods Course for 2<sup>nd</sup> year Engg / MS students at BITS Pilani. Offered course twice between 2002 and 2004.

## **Student Mentoring : BTech / MDes / MSc**

Partha Pratim Das (MDes, Awarded 2017)	Prefab DIY Toilets
Aastha Saxena (MSc, Awarded 2016)	Green Sanitation Business Models
Mohit Gupta (MDes, Awarded 2013)	Rural Housing Knowledge Network
Pavan Sonkar (MDes, Awarded 2010)	Animation Film on Ecological Sanitation
Prashant Borkar (MDes, Awarded 2010)	Re-design of Potter's Wheel powered by solar energy

Lavanya Jain  
(BTech, Awarded 2010) Nutrient Recovery from Human Urine

Punam Kumari  
(MSc, Awarded 2009) Ecological Sanitation Technologies

### **Student Mentoring *PhD* (Thesis Advisor, Ongoing)**

Prasannakumaran K M “Valorisation of Areca Sheath – Entrepreneurship in MSME Sector”

Kyawt Yin Min Thein “Vulnerability Reduction for small and marginal farmers in Bago Region, Myanmar”

Sanjay Singh “Understand Drivers and Barriers to achieve Adolescent Empowerment Outcomes in Rural India”

Anuja Bhargava “Policy Framework for Improving Nutritional Status of Children in Tribal Communities”

Md Ismail Akbani “Leveraging Design Thinking to Co-create Culturally Compatible Interventions for Handloom Artisans”

Nivedita Banerjee “Study of Menstrual Management Practices in Rural Gujarat and Development of a Sustainable Framework”

Chandramani Sharma “Multimodal Screening & Management System of Mental Wellbeing in Low Resource Settings”

Shivani “A Study of Sanitation Entrepreneurship Ecosystem in India”

Namrata Tyagi “Mapping double duty holistic nutritional interventions to target the dual burden of malnutrition”

Kapil Tomar “Frugal Innovations using IoT & ML to Enhance Quality of Maternal Health in Rural Areas”

Parvesh Kumar “Regenerative Design Framework based on study of Building Materials & Thermal Comfort in Rural Habitat”

Partha Pratim Das “Improving delivery of Sustainable Rural Sanitation by Applying Design Thinking”

Amruta Khairnar Patil “Developing a Circular Economy Model for Rural Sanitation”  
(Expected Submission Date : May 2023)

Nalini Srinivasan "A study of ICT adoption by rural women entrepreneurs in India" (Expected Submission Date : May 2023)

### **Student Mentoring *PhD* (Thesis Advisor, Completed)**

Suneet Anand "Mainstreaming 'Green' Habitat Development though Empowered Choice Making" (Awarded, 2023)

Mona Chhabra Anand "A resilience approach to enhance quality of rural housing in India" (Awarded, 2017)

Sugandh Malhotra "Design Forecasting Framework for Future Design Possibilities" (Awarded, 2016)

Md Azizur Rahman "Optimization of Nutrient Recovery from Human Urine - An Eco San Approach" (Awarded, 2016)

Naresh Kumar Sharma "Ecologically Sound Fire-retardancy Protocols for round bamboo *Dendrocalamus strictus*" (Awarded, 2015)

V Ganesh Prabhu "Scientific Analysis of Medicinal Plants from an Ayurvedic Perspective" (Awarded, 2014)

Sutapa Pati "Values-centred Design Framework for Sustainability" (Awarded, 2014)

Chandrashekhar Verma "Studies on Mechanical Properties of Laminated Bamboo Composites" (Awarded, 2013)

R Gopinath "Validation of Ethnoveterinary Medicines for their anthelmintic activity in Sheep" (Awarded, 2013)

S Ramesh Sakthivel "Design & Development of closed-loop sanitation systems based on principles of ecosan" (Awarded, 2012)

Charru Malhotra "Good governance for Rural Development - A study of select cases of e-governance in the Indian context" (Awarded, 2010)

### **Services & Outreach**

Chairperson, CRDT Research Committee, IIT Delhi : 2019 to continuing  
All activities of CRDT Research Committee, Chairing Research Committee Meetings, Evaluating and Approving Research Proposals, Selecting and Monitoring Progress of all Research Students in the Centre.

Convenor, CRDT Research Committee, IIT Delhi : 2010 to 2015  
All activities of CRDT Research Committee, Convening Research Committee mtgs, Evaluating & Approving Research Proposals, Selecting & Monitoring Progress of all Research Students in the Centre.

Convenor, CRDT Faculty Board, IIT Delhi : 2006 to 2009

All activities of CRDT Faculty Board, Convening Faculty Meetings, Compiling Annual Reports, Making Presentations to visiting Delegations etc.

Convenor, NRCVEE Faculty Board, IIT Delhi : 2006 to 2009

All activities of NRCVEE Faculty Board, Convening Faculty Meetings, Compiling Annual Reports, Making Presentations to visiting Delegations etc.

Volunteer, Tej Gyan Foundation, Pune, India. 2007-2015

Conducting Leadership Trg Programmes for colleges, corporates, CBOs etc

Programme Officer, NSS IIT Delhi : 2005 to 2009

Organising activities for self-development of students

Assistant Warden, Meghnad Saha Hall, IIT Kharagpur : July 2003-Dec 2004

Administration of the Student Hostel

Editor, Institute Newsletter Committee, IIT Kharagpur : March 2003-Dec 2004

Compiling and Publishing Quarterly Institute Newsletter

Coordinator, Technology Innovation Centre, BITS Pilani : 2001-2002

Nurturing innovative start up ventures, incubating ideas

Secretary, Patriotic & People-oriented Sci & Tech Foundation, 1999 – Present

Administrative & Organisational responsibilities of the Trust

General Secretary, Students Affairs Council, IIT Delhi : 1996-97

Highest elected post in the Students' Body at IIT Delhi

Convener, Nature Club, IITD : 1996-99

Voluntary Student Body, Organising talks, films, debates concerning environment & development

## **Organisation of Conferences / Workshops / Seminars**

2022 Collaborative Innovation for Promoting Rural Abundance (CIPRA 2022) between July 23-24 at Sewagram, Maharashtra

2015 Indo US Roundtable on Building Partnerships for Sustainability Solutions at Centre for Environment Education, (Jointly with Walton Sustainability Solutions Initiative, ASU) Ahmedabad, India, 19 October 2015. (Co-Organiser : Rajesh Buch)

Indo US Roundtable on Building Partnerships for Sustainability Solutions at School of Planning and Architecture, (Jointly with Walton Sustainability Solutions Initiative, ASU) New Delhi, India, 16 October 2015. (Co-Organiser : Rajesh Buch)

2014 Coordinator of the CEP on Rural Marketing for Rajasthan Khadi Board at IIT Delhi, India, 17-19 Sep 2014.



Coordinator of the CEP on Rural Marketing for Rajasthan Khadi Board at IIT Delhi, India, 25 – 27 Aug 2014.

Sanitation Roundtable on Achieving Nirmal Bharat as part of the campaign *Take Poo to the Loo*, IIT Delhi, India, 6 March 2014

Coordinator of the CEP on Rural Marketing for Rajasthan Khadi Board at IIT Delhi, India, 22-24 Jan 2014.

Workshop “Transforming the Classroom using the Celebrate, Investigate, Discover Approach” as part of the Edu Excellence Conference, IIT Madras, India, 27-28 January 2014.

2013 5<sup>th</sup> Edu Excellence Conference, IIT Delhi, India, 16 – 17 November 2013. (Member : Core Organising Team)

CEP on Coaching Fundamentals for Wisdom-Based Leadership, NRCVVE, IIT Delhi, India, 9-12 April 2013.

Maharashtra Bamboo Artisans' Training (Novel Crafts Development) Workshop, KVIC and IIT Delhi, at State Bamboo Mission, Konkan, Maharashtra, India, March 8–9 2013.

Chhattisgarh Bamboo Artisans' Training (Novel Crafts Development) Workshop, KVIC and IIT Delhi, at State Bamboo Mission, Raipur, Chhattisgarh, India, August 28–29 2012.

2012 National Workshop on Rural Housing Knowledge Network, MoRD and IIT Delhi, at IIT Delhi, India, July 16, 2012.

Sikkim Bamboo Artisans' Training (Novel Crafts Development) Workshop, KVIC and IIT Delhi, at State Bamboo Mission, Gangtok, Sikkim, India, June 24–25 2012.

Meghalaya Bamboo Artisans' Training (Novel Crafts Development) Workshop, KVIC and IIT Delhi, at State Bamboo Mission, Shillong, Meghalaya, India, June 21–22 2012.

Assam Bamboo Artisans' Training (Novel Crafts Development) Workshop, KVIC and IIT Delhi, at Panchratna, Nalbari, Guwahati, Assam, India, June 18–19 2012.

Kerala Bamboo Artisans' Training (Novel Crafts Development) Workshop, KVIC and IIT Delhi, at URAVU, Wayanad, Kerala, India, May 24-25, 2012.

Southern Regional Workshop on Rural Housing, MoRD and IIT Delhi, Thiruvananthapuram, Kerala, India, March 1-2, 2012.

2011 Summit on Sustainable Habitat, New Delhi, New Delhi, India, December 9-11, 2011. (Member : Core Organising Team)

- One day Workshop on Development of Handbook for Ecosanitation Systems, IIT Delhi and UNICEF, IIT Delhi, India, August 31, 2011.
- 2010 Workshop on Developments in Waterless Urinals Technology, IIT Delhi and VVF, IIT Delhi, India, March 6, 2010.
- 2009 One-day Workshop “Hind Swaraj and its Contemporary Relevance” IIT Delhi, India, November 2, 2009.
- Round Table on Evolving a fresh approach to learning of Vision, Wisdom and Values, NRCVEE IITD and IITD Alumni Association, IIT Delhi, India, October 22, 2009.( Member : Core Organising Team)
- Evolving Citizen-Centric Rural e-Governance Framework, Centre of ICT & e-Governance-IIPA and IIT Delhi, India, October 5, 2009. (Chief Organiser : Charru Malhotra)
- 2005 SERC Winter School on Natural Disaster Management, IIT Delhi, India, December 16 - 27, 2005. (Chief Organiser : Santosh Satya)
- 2005 Three-Tier Dissemination Event on Bamboo-based Disaster-Resistant Construction Technology, Jointly organised by HSMI & IIT Delhi, India, March 21 - April 1, 2005. (Chief Organiser : P Sudhakar)
- National Conference on Aging and Dying, IIT Kharagpur, India, November 4-6, 2005. (Chief Organiser : Suhita Chopra Chatterjee)
- 2004 National Conference on Traditional Knowledge Systems of India, IIT Kharagpur, India, Jan 9-11, 2004.
- 1999 2nd Regional Congress on Traditional Sciences and Technologies, (Bundelkhand Samaaj Srijana Samvaad), Orchha, MP, India, November 13 - 18, 1999. (Member : Core Organising Team)
- 1st Regional Congress on Traditional Sciences and Technologies of Andhra Pradesh, (Lokavidya Andolana Sadassu), Chirala, AP, India, June 2 - 4, 1999. (Member : Core Organising Team)
- 1998 3rd Congress on Traditional Sciences and Technologies of India, (Lokavidya Mahadhiveshan), Gandhian Institute of Studies, Varanasi, India, October 28 - November 2, 1998. (Member : Core Organising Team)

