CURRICULUM VITAE

1.	**Name**	:	Prof. V. Vasudeva Rao
2.	**Date of Birth**	:	21 – 01 - 1955
3.	**Present Position/Nature of Job**	:	Visiting Professor / Research & Teaching
4.	**Specializations**	:	Superconductivity & Applications Vacuum Technology Cryogenic Engineering Low Temperature Physics
5.	**Address**	:	Cryogenic Engineering Centre Indian Institute of Technology Kharagpur – 721 302, India
6.	**E-mail/web**	:	vvrao@cryo.iitkgp.ac.in vutukuruvasudevarao@gmail.com www.iitkgp.ac.in
7.	**Phone**	:	+91-3222-281445 (Off.) +91- 9933078577 (Mob.)
8.	**Educational Qualifications**	:	

Course	Year	Institute	Subjects	Division
Ph.D	1985	Indian Institute of Technology, Madras	"Studies on some superconducting and Magnetic Materials"	Degree Awarded
M.Sc	1977	S.V. University Tirupati, A.P	Physics (Electronics)	First Class
B.Sc	1975	S.V. University Tirupati, A.P	Mathematics, Physics and Chemistry	Distinction

9.Teaching / Professional Experience :

Period	Institute	Designation	Nature of Duty
Feb 2020 – Till Date	I.I.T., Kharagpur	**Visiting Professor**	♦ Teaching M.Tech (Cryo Engg.) ♦ Research in Applied Superconductivity/ Cryogenic Technology / magnetic & dielectric materials. ♦ Development of vacuum and Applied superconductivity laboratories for Teaching / Research/industrial training.
Aug. 2004 – Jan-2020	I.I.T., Kharagpur	**Professor(HAG) & Ex-HOC**	♦ Head of the Centre from Sep. 2006 to Dec. 2012. ♦ Teaching M.Tech (Cryo Engg.) ♦ Research in Applied Superconductivity/ Cryogenic Technology / magnetic & dielectric materials. ♦ Development of vacuum and Applied superconductivity laboratories for Teaching / Research/industrial training.
Feb. 1998 – July 2004	I.I.T., Kharagpur	Associate Professor	M.Tech & B.Tech teaching and research in Applied Superconductivity and Vacuum Technology.
Nov. 1990 - Feb. 1998	I.I.T., Kharagpur	Assistant Professor	Same as above.
July 1985 - Nov. 1990	I.I.T., Kharagpur	Lecturer	Same as above
July 1982 - July 1985	I.I.T., Kharagpur	SRA	M.Tech (Cryogenic Engineering) teaching laboratory, maintenance of Cryogenic Plants

			(LHe, LN_2).
Feb. 1981 - June 1982	I.I.T., Madras	SRF	Worked for the DAE Project "Studies of adsorption and desorption under the conditions of ultra high vacuum and low temperatures".
Sept. 1977 - Feb. 1981	I.I.T., Madras	JPA	Worked for the DST Project "Thermophysical Properties of constructive materials at low temperatures".

10. Administrative Experience :

1. Served as Head of the Cryogenic Engineering Centre for 6 Years and 4 months.
2. Served as Chairman of Hall Management Council to look after the student hostels.
3. Committee member for HAG/ chair professor/ faculty excellence fellowship award, administration.
4. In-charge, training and placement, Cryogenic Engineering.
5. Lab In-charge,Vacuum Technology/Applied Superconductivity Laboratories, Cryo. Engg. Centre
6. Member, Departmental Academic Committee(PG & R), Cryogenic Engineering.
7. Member, Departmental Faculty Recruitment Committee, Cryogenic Engineering.
8. Member of Board of Research of Siksha 'O'Anusandhan (Deemed to be a university)
9. Expert to assess promotions (scientific/faculty/technical) at IISc, Bangalore and IIT Mumbai.
10. External expert for PhD Theses evaluation from IIT, Chennai, IISc, Bangalore, S. V. University, Tirupati, Osmania University,Hyderabad and JNTU, Anantapur.
11. Reviewer of International journals like Materials and Manufacturing Processes, Journal of Superconductivity and Novel Magnetism , International Transactions of Electrical Energy Systems and Indian Journal of Cryogenics.

11. Awards/Honors :

1. Expert Committee member nominated by DRDO for reviewing the manufacturing process of Hemispherical Resonating Gyroscope (HRG) used for aerospace applications.
2. HAG Professor
3. Fellow of "Indian Cryogenics Council".
4. IEEE – Senior Member
5. Life member of "Indian Vacuum Society".

12. Training Abroad :

1. Received training on operation and maintenance of Collins type Helium Liquefier, handling of LHe, and low temperature experiments, during the period May to Nov. 1984 at Tieftemperaturelaboratorium, Freie University, Berlin, Germany.
2. Received training on Ultra-High Vacuum techniques, operation and maintenance of molecular Beam Epitaxy unit for growing High T_C Superconducting thin films during the period June 4 to 22, 1990 at "RIBER" Company, Paris, FRANCE.
3. Received advanced training on Vacuum techniques and applications at Fachhochschule, Frankfurt, Germany (May - July, 1997).
4. Interacted with Engineers of Bruker R&D on Research Collaboration with Bruker HTS GmBH for making High Tc Superconducting tapes for power applications(18^{th} July to 21^{st} July 2014).

13. Subjects Taught :

- **M.Tech level :**
  1. Vacuum Techniques
  2. Superconducting materials, magnets and devices
  3. High Tc Superconductors for Power Applications
  4. Cryophysics
  5. Cryogenic Engineering Laboratory
  6. Cryophysics & Vacuum Technology Lab
- **B.Tech level :**
  1. Vacuum Technology
  2. Superconductivity and Applications

14. Laboratory Development :

1. Developed "Applied Superconductivity Laboratory" to carry out research in Superconducting fault current limiter (SFCL), superconducting cables for power/energy applications, Superconducting thin films, Superconducting Magnets for Energy Storage /nuclear fusion applications etc.
2. Developed a sophisticated "Vacuum Technology - Teaching Laboratory" under Indo-German Collaboration Programme to train students/technicians/scientists/engineers from Industries, on Vacuum production and measurement, design and trouble shooting of Vacuum Systems, applications.

15. Present Areas of Research :

- High T_c Superconductor for Power Applications (Cables/ Motors/SFCL/SMES)

- Superconducting cables (CICC type) and magnets for Nuclear Fusion applications
- Vacuum Technology for Process Applications

16. Publications/Presentations/Book Authored :

- **Referred Journals : 106– nos. For details see Annexure - I**
- **Conference Proceedings : 18 – nos. For details see Annexure – I**
- **Conference Presentations : 69 – nos. For details see Annexure – I**
- **Text Book : Vacuum Science and Technology**
  V.V.Rao, T.B.Ghosh, K.L.Chopra
  Allied publishers, New Delhi.

17. PDF/Ph.D/M.Tech/B.Tech/M.Sc guidance :

- **PDF** : **1** Completed (Applied Superconductivity)
- **Ph.D.** : **11** Completed (Applied Superconductivity, Magnetic materials & Polymer nanocomposites)
  3 in progress (2 in Applied Superconductivity and 1 in Dielectric oxide materials)
- **M.S.** : **3** Completed (Applied Superconductivity)
- **M.Tech** : **35** completed (Cryogenic Engg. / Applied Superconductivity / Vacuum Technology)
- **B.Tech/M.Sc** : **5** completed (Applied Superconductivity, Vacuum Technology and Microwave Instrumentation)

18. List of Sponsored Research & Industrial Consultancy Projects :

1. Design and development of a 5 m. long single phase HTS cable (LPH), Central Power Research Institute (CPRI), Bangalore – Rs 51. 21 lakhs (**Sponsored Research**- Ongoing)
2. Calibration of RTD PT-500 sensors with thermowell from lowest possible temperature (4 - 30K) to room temperature using cryocooler/ liquid helium– Rs. 3,66,390 (**Consultancy**- Completed)
3. R & D Projects on High Temperature Superconductor Technology (RDTS), Power Grid Corporation of India Ltd, Haryana – Rs. 67,41,600 (**Consultancy**-Completed)
4. Advising on High Vacuum Technology (AHVT) – Standard Internationals Precision Engineers Pvt. Ltd., Peenya Industrial Area, Bangalore – Rs. 12 lakhs (**Consultancy**-Completed)
5. Feasibility Studies / Design Criteria for HTS Power Transmission Cables and demonstration of a simple Laboratory scale single phase HTS cable (FCO), Central Power Research Institute (CPRI), Bangalore – Rs 35. 52 lakhs **(Sponsored Research**- Completed)
6. Characterization of Torque Tube under cryogenic and vacuum conditions (CTTV), Bharat Heavy Electricals Ltd (BHEL), R & D Centre, Hyderabad - Rs.5,47,200 (**Consultancy**- Completed)
7. Consultancy for developing experimental set up for cryogenic condition for aerospace application (CCAA), CIPET, Bhubaneswar – Rs. 1.8 lakhs **(Consultancy**- Completed)
8. Reduction of copper from the existing copper bus-bars, Schneider Electrics, Bangalore – Rs. 6 lakhs **(Consultancy**- Completed)
9. Design of support structure for cryogenic High – Temperature superconducting coil of HTSC motor (CHCH), BHEL R&D Hyderabad - Rs. 11.85 lakhs. **(Consultancy)** (Completed)
10. Design and Development of Superconducting Fault Current Limiter, Crompton Greaves Ltd., Mumbai – Rs. 20 lakhs. **(Consultancy** - Completed)
11. Development of Advanced Vacuum Technology, Crompton Greaves Ltd., Mumbai – Rs 10 lakhs. **(Consultancy** - Completed)
12. Parametric evaluation of superconducting cables for fusion grade magnets, BRFST, D.A.E. -Rs. 42.7 lakhs. **(Sponsored Research--** Completed)
13. Development of Infrastructural facilities at Cryogenic Engg Centre (FIST) High field superconducting magnets and vacuum furnace. DST project - Rs 1 crore. **(Sponsored Research--** Completed)
14. Development of E-learning technologies for Advanced Engineering Subjects and application to teaching of Cryogenic Engineering. MHRD – Rs 7.9 lakhs. **(Sponsored Research**-Completed)
15. Analysis of decompression chamber, KASCO Industries – Rs – 50,000. **(Consultancy**- Completed)
16. R & D Study on Aluminium coating of composite Airframe of PJ-10. DRDL - Rs 3.5 lakhs. **(Consultancy**- Completed)
17. "Development of UPS based on superconducting energy storage". DST project - Rs 40 lakhs. **(Sponsored Research**- Completed)
18. "Magnetic and electrical transport properties of disordered materials" CSIR project – Rs 5 lakhs. **(Sponsored Research**- Completed)

19. "Studies on High Resistivity novel intermetallic magnetic alloys". CSIR Project – Rs 9.48 lakhs. **(Sponsored Research-** Completed)
20. High T_C Superconducting thin film devices" – Institute Project - Sponsored by DST- Rs 2 crores. **(Sponsored Research-** Completed)
21. Leak Testing System for testing missiles.SEC Corporation, Hyderabad, Consultancy - Rs 2 lakhs. **(Consultancy-** Completed)
22. "Possible analog gain in current injection superconducting Josephson Network". CSIR Project - Rs 7 lakhs. **(Sponsored Research-** Completed)
23. Development of Calibration curves and software for pressure measurement of sealed vacuum interrupters. Alstom Ltd, Kolkata, - Rs 30,000/- **(Consultancy-** Completed)
24. Calibration of Standard Leak. Alstom Ltd, Kolkata, - Rs 10,000/- **(Consultancy-** Completed)

19. Invited Talks(13) :

1. Delivered an online invited lecture on "Superconducting Magnetic Energy Storage and its applications", in National Webinar on "Recent Trends in Energy Storage Materials and its Applications" at Sri Padmavati Mahila Visvavidyalayam (Women's University), Tirupati (26th Nov 2020).
2. Delivered an online invited lecture on "Superconducting Magnetic Energy Storage Device", at R.V. College of Engineering, Bengaluru (17th Nov 2020).
3. Delivered a invited lecture in Faculty Development Programme on "Superconducting Technologies for Indian Power Sector", at Veer Surendra Sai University of Technology, Burla, Sambalpur, Orissa (26th Oct 2019).
4. Delivered a invited lecture on "High T_c Superconducting Offshore Wind Turbine Generators – An Introduction", at Workshop on Future Trends of Cryogenic Engineering and Applied Superconductivity, IUAC, New Delhi (21st June 2019).
5. Delivered a Keynote address on "Superconducting Technologies for Indian Power Sector ", at National Conference on Recent Advances in Materials and Molecules, Padmavati Mahila University, Tirupati. (21st-22nd Feb 2019).
6. Delivered a invited lecture on "High T_c Superconducting Power Devices – An Overview", at 27th National Symposium on Cryogenics and Superconductivity,IIT-Bombay (16th Jan 2019).
7. Delivered lecture on "Superconducting Magnetic Energy Storage (SMES) and its applications" to the students of School of Energy Science & Engineering, IIT Kharagpur on 4th January, 2018.
8. Delivered lecture on "Superconducting Technologies for Indian Power Sector" to the engineers of Bharat Heavy Electricals Limited, Hyderabad during 20th to 25th November, 2017.
9. Delivered lecture on "High Tc Superconducting (HTS) Technology for Power Transmission" to the executives of POWERGRID Corporate Centre, Power Grid Corporation of India Limited, Gurgaon during 9th to 13th October, 2017.
10. Delivered lecture on "Superconductor Technology applications- HTS cables" to the executives of POWERGRID Corporate Centre, Power Grid Corporation of India Limited, Gurgaon during 16th to 17th March 2017.
11. Delivered lecture on "Superconducting Power Cables - An Overview" in CABLETECH 2017, Central Power Research Institute, Bangalore during 9th to 10th February, 2017.
12. Delivered lecture on "Superconducting Technologies for Indian Power Sector" in Jadavpur University, Kolkata on 28th March, 2016.
13. Delivered a invited lecture on "Superconducting Magnetic Energy Storage – A review", at 18th National Symposium on Cryogenics, NPL-New Delhi (21st to 23rd Nov 2001).

20. Workshops / Short term Courses / Symposium Conducted as co-ordinator(37) :

1. Organized a one-week online course on "Superconductor Based Power Applications" under AICTE sponsorship during 1 - 7 October, 2020 at IIT, Kharagpur
2. Organized a two-week course on "Vacuum Technology and Process Applications" 14th October to 23rd October 2019, IIT Kharagpur.
3. Organized a two-week course on "Vacuum Technology and Process Applications" under AICTE sponsorship during 1 - 14 December 2018 at IIT, Kharagpur.
4. Organized a five days In-House training to the engineers of Applied Materials India Pvt. Ltd (SSG Group), Bangalore on "Vacuum Technology" during 12th to 16th Nov, 2018.
5. Organized a five days In-House training to the engineers of Applied Materials India Pvt. Ltd (DFT Group), Bangalore on "Vacuum Technology and Process Applications" during 16th to 20th July, 2018.
6. Organized a one day In-House training to the engineers of Atlas Copco India Ltd, Jaipur on "Vacuum Technology and Process Applications" on 05th July, 2018.

7. Organized a two days In-House training to the engineers of Busch Vacuum India Pvt. Ltd, Gurgaon on "Vacuum Technology and Process Applications" during 25th to 26th June, 2018.
8. Organized a five days In-House training to the engineers of Applied Materials India Pvt. Ltd (SEMVision Group), Bangalore on "Vacuum Technology and Process Applications" during 28th May to 1st June, 2018.
9. Organized a five days In-House training to the engineers of Applied Materials India Pvt. Ltd (DFT Group), Bangalore on "Vacuum Technology and Process Applications" during 2nd to 6th April, 2018.
10. Organized a two-week course on “Vacuum Technology and Process Applications” 17th November to 26th November 2016, IIT Kharagpur.
11. Organized a two-week course on “Vacuum Technology and Process Applications” 15th June to 24th June 2016, IIT Kharagpur.
12. Organized a two-and-half days In-House training to the engineers of VSSC-ISRO, Thiruvananthapuram on "Vacuum Technology" during 9th to 11th December, 2015.
13. Organized a two-week course on “Vacuum Technology and Process Applications” 18th November to 27th November 2015, IIT Kharagpur.
14. Organized a two-week course on “Vacuum Technology and Process Applications” 14th April to 23rd April 2015, IIT Kharagpur.
15. Organized a two-week course on “Vacuum Technology and Process Applications” 1st Nov to 10th Nov 2013, IIT Kharagpur.
16. Organized a two-week course on “Vacuum Technology and Process Applications” 1st Nov to 10th Nov 2012, IIT Kharagpur.
17. Organized a two-week course on “Vacuum Technology and Process Applications” 11th Nov to 22th Nov 2011, IIT Kharagpur.
18. Organized a two-week course on “Vacuum Technology and Process Applications” 22nd Oct to 2nd Nov 2010, IIT Kharagpur.
19. Organized a two-week course on “Vacuum Technology and Process Applications” 2nd Nov to 12th Nov 2009, IIT Kharagpur.
20. Organized a two-week course on “Vacuum Technology and Process Applications” 12th to 22nd Oct 2008, IIT Kharagpur.
21. Organized a two-week course on “Vacuum Technology and Process Applications” 17th to 27th Nov 2007, IIT Kharagpur.
22. Organized a two-week course on “Vacuum Technology and Process Applications” 1st to 11th Nov 2006, IIT Kharagpur.
23. Organized a two-week course on “Vacuum Technology and Process Applications” 2005, IIT Kharagpur.
24. Organized a two-week course on “Vacuum Technology and Process Applications” 2004, IIT Kharagpur.
25. Organized a four day course to the engineers of Crompton Greaves, Aurangabad on Vacuum Technology during 15th to 18th October 2003.
26. Organized one-day symposium on “Governance of autonomous institutes of higher education” under IIT TA, 10th Jan 2003.
27. Organized a two-week course on “Vacuum Technology and Process Applications” from 18th – 28th February 2003, IIT Kharagpur – 15 participants
28. Organized a two-week course on “Vacuum Technology and Process Applications” from 8-19 April 2002, IIT Kharagpur – 15 participants
29. Organized a two-week course on “Vacuum Technology and Process Applications” for the engineers of Sashun Chemicals Ltd., Cuddalore – October 2001– 20 Participants
30. Organized a two-week course on “Vacuum Technology and Applications” from 26th Feb to 9th March 2001 at IIT Kharagpur –10 participants
31. Organized a two-week course on vacuum Science & Technology under AICTE sponsorship during 7 - 17 March 2000 at IIT, Kharagpur – 30 participants
32. Organized a short course on Vacuum Technology to the Engineers of GEC, ALSTOM, Calcutta during 25 - 27 October, 1999 –15 participants.
33. Organized a workshop on "Vacuum Technology - Modern Trends” along with Pfeiffer Vacuum India Ltd., Secunderabad during 19-23 January, 1998 –13 participants.
34. Organized a short term course on "Vacuum Technology" to the personnel of "Technovac Corporation, Pune" - 14-18 April, 1997 –15 participants.
35. Organized workshop on "Cryogenic Techniques and instrumentation" - during 24-28 June, 1996 -10 participants.
36. Organized workshop on "Vacuum Technology and its applications in Cryogenics" - during 22-26 April, 1996, along with Indian Vacuum Society, attended by 40 participants.

37. Organized a self sponsored workshop on "Vacuum Techniques" during 26-30 June, 1995 - Attended by 25 participants from Industries/Academic Organizations.

Annexure - I
List of Publications / Conference Presentations

♦ PUBLICATIONS IN JOURNALS [106 Nos]:

1. "Calibration of a Cryogenic Turbine based Volumetric Flow Meter (CTVFM) using sub-cooled Liquid Nitrogen and solution for its practical issues", Isaac de Souza, Abhik Sarkar, Ankit Anand, Maalika Sarkar, J. Senthil Kumar, Abhay Singh Gour and Vutukuru Vasudeva Rao, IEEE Sensors Journal Volume 21, Issue 10, May 2021, pp. 12077-12083.

2. "Development of Cost Effective Lab Scale 6 Tesla Superconducting Magnet", V Ravindra, Uttam Bhunia, P. N. Vishwakarma, **V.V.Rao,** and S. K. Sarangi**,** *International Journal of Engineering Research and Development,* Volume 16(10), October 2020, pp. 20-28.

3. "Vacuum Furnaces for Metallurgical Processing", **V.Vasudeva Rao** and V Ravindra**,** *Special issue on "Specialized Coatings" in Journal of Metallurgy and Materials Science,* Volume 62 (1-2), January-June 2020, pp. 123-129.

4. "Vacuum Based Coatings for Engineering Applications", **V.Vasudeva Rao** and V Ravindra**,** *Special issue on "Specialized Coatings" in Journal of Metallurgy and Materials Science,* Volume 62 (1-2), January-June 2020, pp. 71-76.

5. "High Tc superconducting power devices- An overview", **V.Vasudeva Rao,** *Indian Journal of Cryogenics*, vol. 45, pp. 1-18, 2020.

6. "I-V characterization of HTS tape under tensile stress using cryogenic UTM along with FEM analysis", Ankit Anand, Srikumar Nayek, Abhay Singh Gour and **V.V.Rao,** *Indian Journal of Cryogenics*, vol. 45, pp. 136-139, 2020.

7. "Experimental investigations on power frequency electrical breakdown characteristics of liquid nitrogen for HTS power devices", D K Sharma, V A S Muralidhar Bathula, Sudheer Thadela and **V. V. Rao,** *Indian Journal of Cryogenics*, vol. 45, pp. 140-143, 2020.

8. "Optimum Location of R-SFCL in an IEEE Bench-Marked Four-Machine, Two-Area Test System", Abhay Singh Gour, Senthil Kumar J and **V.V.Rao,** *Indian Journal of Cryogenics*, vol. 45, pp. 155-159, 2020.

9. "Development and Testing of 2G High Temperature Superconducting (HTS) Field Coils for HTS Synchronous Machines", V A S Muralidhar Bathula, D K Sharma, U K Choudhury and **V. V. Rao**, *Journal of Electrical Engineering & Technology* (Manuscript accepted and in press).

10. "Structural Analysis of 2G HTS Tapes under Different Loading Conditions for HTS Power Cable using Finite Element Modeling", Ipsita Das, Vineet Sahoo and **V. V. Rao**, *Physica C: Superconductivity and its applications*, (Manuscript accepted and in press).

11. "Central Medical Vacuum Systems for Corona Treating Hospitals", **V. Vasudeva Rao**, Manuel Seger, Sumeet Thakur and V. Vanisri, *International Journal Dental and Medical Sciences Research,* Volume 2, July 2020, pp. 35-40.

12. "Optimization of HTS Superconducting Solenoid Magnet Dimensions for Maximum Energy Density", Poulomi Mukherjee and **V. V. Rao**, *Journal of Superconductivity and Novel Magnetism* (Manuscript accepted and in press).

13. "Effective location of SMES for Power Fluctuation Mitigation of Grid Connected Doubly Fed Induction Generator", Poulomi Mukherjee and **V. V. Rao**, *Journal of Energy Storage*, Volume 29, June 2020, pp. 101369.

14. "Tuning the permittivity of tellurium dioxide by Ti substitution", Keerthana, **V.V.Rao,** and Dr . A. Venimadhav, *Ceramics International,* Volume 46, Issue 7, May 2020, pp. 8827–8831.

15. "A study on high Temperature Superconducting (HTS) Double Pancake Field Coils for HTS Synchronous Machines Applications", VAS Muralidhar Bathula, D K Sharma, Abhay S Gour, U K Chowdhury and **V.V.Rao,** *Indian Journal of Cryogenics*, vol. 44, pp. 199-204, 2019.

16. "Selection Criteria of Cooling System for a Cryopump Based on Heat Load Estimation", Srikumar Nayek, Ankit Anand, Abhay Singh Gour and **V.V.Rao,** *Indian Journal of Cryogenics*, vol. 44, pp. 150-154, 2019.

17. "Hydraulic Analysis of Liquid Nitrogen flow through concentric annulus with corrugations for High Temperature Superconducting Power cable", Ipsita Das and **V. V. Rao**, *Cryogenics* Volume 103, October 2019, pp. 102950. *(*https://doi.org/10.1016/j.cryogenics.2019.05.010*)*.

18. "Simulation and testing of stacked HTS 2G tapes for superconducting cable", Ankit Anand, Srikumar Nayek,Abhay Singh Gour and **V.V.Rao**", *Power Research*, Volume 14, December 2018, pp. 132–137.

19. "Design of electrical terminals for high temperature superconducting (HTS) power cable", Srikumar Nayek, Ankit Anand, Abhay Singh Gour and **V.V.Rao**, *Power Research*, Volume 14, December 2018, pp. 138–142.

20. "Design and Development of High Temperature Superconducting Magnetic Energy Storage for Power Applications- A Review", Poulomi Mukherjee and **V. V. Rao**, *Physica C: Superconductivity and its applications*, Volume 563, August 2019, pp. 67–73.

21. "Parametric studies on entropy generation rate in dual channel cable-inconduit conductors (CICCs) with supercritical helium (SHe) using computational fluid dynamics", Raja Sekhar Dondapati and **V. V. Rao**, *Fusion Engineering and Design* Volume 142, May 2019, pp. 63–69

22. "Development and Testing of a 1G based High Temperature Superconducting (HTS) Double Pancake Coil for HTS Synchronous machines", V A S Muralidhar Bathula, U K Chowdhury and **V. V. Rao**, *Physica C: Superconductivity and its applications*, Volume 562, March 2019, pp. 36–41.

23. "Superconducting Magnetic Energy Storage for Stablizing Grid Integrated with Wind Power Generation System", Poulomi Mukherjee and **V. V. Rao**, *Journal of Modern Power Systems and Clean Energy* Volume 7, March 2019, pp. 400–411.

24. "Computational Investigation on Thermohydraulic Characteristics of High-Temperature Superconducting (HTS) Power Cables", Sudheer Thadela, **V. V. Rao**, Rahul Agarwal and Raja Sekhar Dondapati, *Physica C: Superconductivity and its applications*, Volume 559, February 2019, pp. 25–31.

25. "Optimal Location of Resistive SFCL for Safe Guarding Protection Devices in a Typical Indian Power Grid", Abhay S Gour, and **V.V.Rao**, *IOP Conference Series: Materials Science and Engineering*, vol. 502 (1), pp. 012143, 2019.

26. "Electromagnetic analysis of 0.2 MW High Temperature Superconducting (HTS) synchronous machine for HTS pole coil development", VAS Muralidhar Bathula, Abhay S Gour, U K Chowdhury and **V.V.Rao** *IOP Conference Series: Materials Science and Engineering*, vol. 502 (1), pp. 012144, 2019.

27. "Depth-sensing indentation and nano-dynamic mechanical properties of Aluminum Nitride nanoparticles reinforced high density Poly-Ethlyene nanocomposites", P. Rajeshwari, **V. V. Rao** and T.K. Dey, *Polymer Composites*, Volume 40, Issue 1, January 2019, pp. 240–254.

28. "Measurement of Outgassing rates of Kevlar and S-Glass materials used in Torque Tubes of High Tc Superconducting (HTS) Motors", S. Thadela, B V A S Muralidhar, B Kalyani, U K Chowdhury,S N Yadav and **V. V. Rao**, *Progress in Superconductivity and Cryogenics*, Volume 20, Issue 4, December 2018, pp. 11–15.

29. "Development of a lab-scale High T_c Superconducting power cable", T Sudheer, V.A.S. Muralidhar Bathula, U. K. Chowdhury, B Nageshwar Rao, A Usoskin and **V V Rao**, *Indian Journal of Cryogenics*, Volume 43, Issue 1, 2018, pp. 181-186.

30. "Step-by-step design of a single phase 3.3 kV/200 A resistive type superconducting fault current limiter (R-SFCL) and cryostat", Soumen Kar and **V. V. Rao**, *Physica C: Superconductivity and its applications*, Volume 550, April 2018, pp. 107–116.

31. "Cold Electronics based 128 Temperature Sensor Interface with 14 leads for testing of High Tc Superconducting Cable", Abhay Singh Gour, S. Thadela and **V. V. Rao**, *Progress in Superconductivity and Cryogenics*, Volume 20, Issue 1, February 2018, pp. 15–18.

32. "Comparative Study on the fastest effective fault limitation for stabilized and stabilizer-free High T_c Superconductors", Soumen Kar and **V. V. Rao**, *Physica C: Superconductivity and its applications*, Volume 541, August 2017, pp. 50–54.

33. "Process simulation of vacuum desalination systems for producing potable drinking water from saline sea water", S. Thadela, Raja Sekhar Dondapati and **V. V. Rao**, *International Journal of Mechanical Engineering and Technology (IJMET)*, Volume 8, Issue 7, July 2017, pp. 1881–1891.

34. "Pressure drop and heat transfer analysis of high temperature superconducting (HTS) motors", V. A. S. Muralidhar Bathula, S. Thadela, Raja Sekhar Dondapati, U. K. Choudhury and **V. V. Rao**, *International Journal of Mechanical Engineering and Technology (IJMET)*, Volume 8, Issue 7, July 2017, pp. 1862–1871.

35. "Current distribution mapping in insulated (Gd,Y)BCO based stabilizer-free coated conductor after AC over-current test for R-SFCL application", Soumen Kar, Venkat Selvamanickam, Xiao-Fen Li, **V. V. Rao**, *IOP Conf. Series: Materials Science and Engineering*, vol. 171 (1), pp. 12118, 2017.

36. "Fault current limiters and Fault current switches based on wide HTS tapes: low cryo-consumption- new applications", A. Usoskin, **V. V. Rao**, R. Dietrich, K. Schlenga, *IOP Conf. Series: Materials Science and Engineering*, vol. 171 (1), pp. 12119, 2017.

37. "Optimum Location of Thermal Radiation Shield in Superconducting Rotating Machines", P. A. Sai Kiran and **V. V. Rao,** IOP *Conf. Series: Materials Science and Engineering*, vol. 171 (1), pp. 12100, 2017.

38. "Fault Limitation Characterstics of lab-scale Resistive Type Superconducting Fault Current limiter", Soumen Kar and **V. V. Rao,** *Indian Journal of Cryogenics*, vol. 41 (1), pp. 166-171, 2016.

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