CURRICULUM VITAE

Venimadhav Adyam
Professor
Cryogenic Engineering Centre
IIT Kharagpur
91-3222-282340 / 9775021822
https://scholar.google.co.in/citations?user=SynU4z0AAAAJ&hl=en&oi=ao
venimadhav@cryo.iitkgp.ac.in

h-index-27

Educational Qualifications

Ph.D from Solid State and Structural Chemistry Unit, **Indian Institute of Science**, Bangalore, India 2001

"***Investigation of electrical and magnetic transport properties of perovskite related metallic and magnetic oxide thin films and multilayers***".

Research Experience Abroad

Postdoctoral fellow at The Pennsylvania State University, Department of Physics USA (2005-2006),

EPSRC Postdoctoral fellow at Cambridge University, Department of Materials Science. UK (2001-2004),

Visting Professor, The Pennsylvania State University, Department of Physics USA (summer 2007),

Positions held

Head, Cryogenic Engg Centre, From Jan 2020
Professor, IIT Kharagpur, Since November 2019
Associate Professor**,** IIT Kharagpur, 2015-2019
Assistant Professor, IIT Kharagpur, 2006-2015
Visiting faculty at Penn State University, summer of 2007

Fellowships Honors and Awards

- MRSI Medal award, MRSI, India
- DST FastTrack Young Scientist Project 2009
- EPSRC postdoctoral fellow '2001'

Teaching

AT IIT KGP:

- Cryophysics (4 Credit)
- Superconducting Materials, magnets and Devices (4 Credit)
- Seminar course (2 Credit)
- PG lab on Cryophysics and vacuum technology (3 Credit)
- UG/PG Lab on Electronics in Physics Dept (3 Credit)
- UG/PG Lab on Electromagnetism and Optics Lab in Physics Dept (3 Credit)
- UG course on Extracurricular activity (Community service)

New Courses developed

- Introduction to Cryogenics and Superconductivity (4 Credit)
- Matter at Low temperature (3 Credit)
- Refrigeration below 1 K (2 Credit)
- Spintronic material and devices (3 Credit)
- Superconducting Devices and Applications (3 Credit)

Research Area

Quantum Materials, Multiferroics, Thin films, nanomaterials and micro- rechargeable batteries

Research Lab

- Setting of PLD for thin film rechargeable batteries, ATDC, IIT KGP
- Setting of SQUID VSM magnetization measurement facility for the institute users, IIT Kharagpur, India
- Setting of (Focused ion beam for nano-lithography) FIB facility for nanopatterning, CRF, IIT KGP
- DC/RF multitarget magnetron Sputtering system, IIT Kharagpur, India
- Low temperature Pyrocurrent measurement set up for multiferroic characterization
- Low temperature Resistivity, Dielectric, Ferroelectric, Magnetodielectric, measurement probe, IIT KGP
- Sorption pump & Low temperature stage for scanning probe microscope, IIT KGP
- Superconductor based cryogen level sensor, IIT KGP
- Soild-phase epitaxy for making cobaltate films, Penn state, USA (Post doc)
- Combinatorial PLD Set up, Cambridge, UK (Post doc)
- AC susceptibility Set up, IISc, India (During PhD)

Sponsored Grants

1. "Refurbishing a DC/RF Sputtering and development of Ferromagnetic/semiconductor hybrid structures for spintrionics" (Grant amount 4.60 Lakhs) funded by SRIC, IIT Kgp, 2007-2010, PI

2. Analytical and computational evaluation of various parameters involved in the design of SC cables (CIC type) to be used for fusion grade magnets (Grant amount 42.7 lakhs) Funded by IPR, Ahmadabad 2008-2011, Co-PI

3. DST Fast track Young Scientist Project on "Fabrication of oxide multiferroic thin films by RF Magnetron Sputtering: Investigation of magnetodielectric and magnetoferroelectric properties" (Grant amount 17.56 Lakhs) by DST, 2009-2012, PI

4. "Synthesis and multiferroic properties of $AFe_{12}O_{19}$ (A= Ba, Sr) nanoparticles reinforced polymer nanocomposites for space applications" funded to CSIR, Grant amount: (Grant amount 17.47 Lakhs), 2009-2012, PI

5. "Studies on novel Heusler alloys for the development of environmentally friendly thermoelectric materials", 2009-2012 DST (35 Lakhs), Co-PI

6. "A bridge project aimed at the expansion of Lithium ion battery research" funded by SRIC, IITKGP (5 Lakhs), 2009-2012, Co-PI,

7. Development of high energy density lithium ion prismatic batteries for laptops, solar and electric vehicles. Future Hi-tech batteries limited, Mohali, 2013-2016 (3.98 Lakhs) Co-PI

8. "Na-ion rechargeable batteries, a cost effective alternative to Li-ion technology" CSTEP, Bangalore (5.6 L), PI

9. Technology transfer of puffed rice making in Scholadher: A drive to make women self sufficient in Sholadher (0.9 Lakhs) 2014-2015, IIT KGP, PI

10. Electric field control of hybrid magnetic interfaces at atomic scale for spintronic applications (100 Lakhs) (IITKGP, SGBSI-Challenge Grant) PI

11. Hybrid Sodium-ion cell /super-capacitor packs for Light Electric Vehicles, Co PI (318 Lakhs)

12. Hierarchically nano-struyctured energy materials for next generation Na-ion storage system and their potential use in electric bi-cycles, Co PI (DST Approved – 94.9 lakhs)

13. Open and intelligent plug-in-electric hybrid technologies for smart Indian cities (UAY- 350 lakhs – Over all 1900 Lakhs)

14. Electric Control of Hybrid Magnetic Interface at Atomic scale for Spintronics application. (SGBSI- 100 Lakhs)

15. Engineering nanoionics interface for high ionic conductivity in batteries. (MHRD- 47.1 Lakhs)

16. Development of CMOS Compatible Resistive Switching Layer and Highly Non-linear Selector for 3D-Stackable 1S1R Crossbar Array-structured Memory Cell. (MHRD- 45.1 Lakhs)

17. Quantum paraelectric to relaxor ferroelectric phase transition in donor and acceptor pair doped TiO2. (SERB- 50.31 Lakhs)

18. Calibration of RTD PT-500 Sensors with Thermowell from Lowest Possible Temperature (4-30 K) to Room Temperature using Liquid Helium and Provide Calibration Certificate Indian Space Research Organisation.

List of Publications of Venimadhav Adyam

Books/Chapters

1. Comparative Studies on Crystalline and Amorphous Vinylidene Fluoride Based Fibrous Polymer Electrolytes for Sodium-Ion Batteries by S., M., Biswal R. , Ghosh S. , S. , Adyam V. (Published by: Springer, 2021)
2. *Chapter on "*Multiferroic Composites Based on a Ferroelectric Polymer" *in* Advances in Polymer Materials and Technology by *CRC press, 2016*

Patents

1. Aluminum Substituted β–Type Electrode for Secondary Cells, D Nayak, PK Jha, A Agrawal, S Janakiraman, K Biswas, S Puravankar, NVP Chaudhary, S Ghosh, V Adyam, Publication date 2019/4, Patent office INDIA, Application number 201931013311.
2. Cryogenic Fluid sensor, A. Venimadhav, Keerthana, Avinash Tripati, Publication date: 2019/11Patent office INDIA, Application number 201931033540.
3. Mesoporous nitrogen doped nano carbon anode for sodium ion battery and preparation method, S Ghosh, A Agrawal, S Janakiraman, K Biswas, V. Adyam, Publication date: 2018/11Patent office INDIA, Application number 201831044837.
4. High-temperature stable composite gel polymer electrolyte for safer sodium ion batteries, S. Janakiraman, A Agrawal, R Biswal, P K Jha, D Nayak, V Adyam, S Ghosh, Patent office INDIA IIT REF. NO: 21473,likelihood for a patent/copyright.

Publications in Refereed Journals

Research Area: Magnetism and Quantum Materials

1. Rajesh kumar R, J Krishna Murthy, J Arout Chelvane and Venimadhav Adyam 'Spontaneous magnetization reversal and Positive exchange bias effect in CoFeSiB/FeCrO3heterostructures'**J Phys D Appl Phys** 17 (2021)
2. K Rudrapal, A Mukherjee, Venimadhav Adyam, A Roy Chaudhuri,Modulation of resistive switching properties of non-stoichiometric WO_{3-x} based asymmetric MIM structure by interface barrier modification **Journal of Applied Physics** 129 (23), 235302 (2021)
3. Electron transport characteristics of FeGa, Ni/n-Si junctions by impedance spectroscopy by Bhattacharya G., Chaudhary N.V., Adhikary T. , Aich S. , Adyam V., **Superlattices and Microstructures,** Page: 106958-106958 (2021)
4. J Krishnamurthy, A Venimadhav, Magnetic field-induced metamagnetic, magnetocaloric and pyrocurrent behaviors of Eu2CoMnO6, **Journal of Magnetism and Magnetic Materials** 500, 166387, 2020
5. C. Dhanasekhar, AK Das, A Das, V Adyam Ferroelectricity in $CaBaCo_4O_7$ by light non magnetic Zn doping, **Journal of Physics: Condensed Matter**, **32** 385802 (2020)
6. Keerthana, Rao, V.V., Venimadhav, A. Tuning the permittivity of tellurium dioxide by Ti substitution **Ceramic International** 46 (7) (2020)
7. Krishnamurthy, J., Venimadhav, A. Magnetic field-induced metamagnetic, magnetocaloric and pyrocurrent behaviors of Eu2CoMnO6, **Journal of Magnetism and Magnetic Materials** (2020) 500, . DOI: 10.1016/j.jmmm.2019.166387
8. Pal, A., Mohan, M., Venimadhav, A., Murugavel, P. Room-temperature magnetization reversal and magnetocaloric switching in Fe substituted GdMnO3 **Phys. Rev. Matrrials** (2020) 4 (4), art. no. 8827, . DOI: 10.1103/PhysRevMaterials.4.044407
9. Weak ferromagnetism in band-gap engineered - (Fe2O3) 1 X (Cr2O3) X nanoparticles *by Rajesh*, Raj, and A. Venimadhav. **Journal of Magnetism and Magnetic Materials** 473 119-124 (2019)
10. C. Dhanasekhar, A. K. Das, A. Das, S. K. Mishra, R. Rawat and A. Venimadhav, Structural, magnetic and electric polarization properties of geometrically frustrated $YBaCo_4O_7$ and $DyBaCo_4O_7$ cobaltites, **Europhysics letters** (Accepted 2019)
11. Anomalous freezing of dielectric polarons near magnetic ordering in multiferroic La0. 5Bi0.

5FeO3 *by* Adyam V., Mallesh S., Krishnamurthy J. , Das A. K., Kakarla D. C. **Ceramics International** 45 6250-6254 (2019)

12. Effects of the thermal and magnetic paths on first order martensite transition of disordered Ni45Mn44Sn9In2 Heusler alloy exhibiting a giant magnetocaloric effect and magnetoresistance near room temperature *by* Adyam V., Chabri T., Ghosh A. , Nair S., Aswasthi A. M., Nath T. K. **Journal of Physics D: Applied Physics** 51 195001- (2018)
13. Interplay of austenite and martensite phase inside martensite transition regime and its role on magnetocaloric effect and magnetoresistance in Ni-Mn-Sn based Heusler alloy *by* Adyam V., Chabri T., Nath T. K. **Intermetallics** 102 65-71 (2018)
14. Investigations on the defect dipole induced pyroelectric current in multiferroic GdMnO3 system *by* Adyam V., Pal A., Sekhar C. D., Prellier W., Murugavel P. **Journal of Applied Physics** 123 014102- (2018)
15. Magnetic and lattice entropy change across martensite transition of Ni-Mn-Sn melt spun ribbons: Key factors in magnetic refrigeration *by* Adyam V., Chabri T., Nath T. K. **Journal of Magnetism and Magnetic Materials** 466 385-392 (2018)
16. Pyrolysis-controlled synthesis and magnetic properties of sol gel electrospun nickel cobaltite nanostructures *by* Adyam V., Kumar B. S., Sekhar C. D., Kalpathy S. K., Anandhan S. **Journal of Sol-Gel Science and Technology** 86 664-674 (2018)
17. Temperature and magnetic field dependent martensite transformation in Al doped Ni-Mn-Sn disorder alloys and its effects on magnetoresistance and magnetocaloric effect near room temperature *by* Adyam V., Chabri T., Aswathi A. M., Ghosh K. , Nath T. K. **Materials Research Express** 5 086511- (2018)
18. Thin film manganese oxide polymorphs as anode for sodium-ion batteries: An electrochemical and DFT based study *by* Adyam V., Ghosh S. , Nayak D. **Materials Chemistry and Physics** 217 82-89 (2018)
19. 4f-3d exchange coupling induced exchange bias and field induced Hopkinsonpeak effect in Gd 2 CoMnO 6 *by* Murthy J. K., Adyam V. **Journal of Alloys and Compounds** 719 341-346 (2017)
20. Coexistence of weak ferromagnetism with magnetoelectric coupling in Fe substituted Co4Nb2O9 *by* Dhanasekhar C., Mishra S. K., Rawat R. , Das A. K., Adyam V. **Journal of Alloys and Compounds** 726 148-153 (2017)
21. Defect induced polarization and dielectric relaxation in Ga2-xFexo3 *by* Mahana S., Dhanasekhar C., Adyam V., Topwal D. **Appl. Phys. Lett.** 111 132902- (2017)
22. Doping a dipole into an incipient ferroelectric: Route to relaxor Ferroelectrics *by* Chaudhary N. P., Sarkar S., Sharma N., Kundu A. K., Menon K. S., Das A., Mahadevan P., Adyam V. **Phy. Rev. B** 96 24107- (2017)
23. Switching from pyroelectric to ferroelectric order in Ni-doped CaBaCo4O7 *by* Dhanasekhar C., Das A. K., Singh R., Das A., Giovannetti G., Khomskii D., Adyam V. **Phys. Rev. B** 96 134413- (2017)
24. Tailoring of magnet orderings in Fe substituted GdMnO 3 bulk samples towards room temperature *by* Pal A., Dhanasekhar C., Adyam V., Murugavel P. **J Phys. Cond. Matter** 405803- (2017)
25. Terahertz- frequency magnetoelectric effect in Ni-doped CaBaCo4O7 *by* Yu S., Dhanasekhar C., Adyam V. , Jones S. D., Man M. K., Madeo J., Wong E. L., Harada T., Krishna M. B., Dani K. M., Talbayev D. **Phys. Rev. B** 96 094421- (2017)
26. Absence of dipolar ordering in Co doped CuO *by* Adyam V., Chaudhary N. P., Murthy J. K. **Solid State Communications** 247 36-39 (2016)
27. Antisite disorder driven spontaneous exchange bias effect in La_{2-x} Sr_x $CoMnO_6$ *by* Adyam V., Murthy J. K., Chandrasekhar K. D., Wu H. C., Yang H. D., Lin J. Y. **Journal of physics. Condensed matter:** 28 086003-086003 (2016)
28. Antisite disorder driven spontaneous exchange bias effect in La2 x Sr x CoMnO6 (0 x 1) *by* Adyam V., Murthy J. K., Chandrasekhar K. D., Wu H. C., Yang H. D., Lin J. Y. **Journal of Physics: Condensed Matter** 28 086003- (2016)
29. Magnetic ordering and conduction mechanism of different electroactive regions in Lu2NiMnO6 *by* Adyam V., Chanda S. , Saha S. , Dutta A. , Murthy J. K., Shannigrahi S. , Sinha T. **Journal of Applied Physics** 120 134102- (2016)
30. Magnetostructural coupling and multiferroic properties in the spin-frustrated system N i 1 x Z n x C r 2 O

4 *by* Adyam V., Chandrasekhar K. D., Murthy J. K., Lin J. Y., Wu H. C., Tseng W. J., Yang H. D. **Physical Review B** 94 205143- (2016)

31. Multiferroic Composites Based on a Ferroelectric Polymer *by* Adyam V. **Advances in Polymer Materials and Technology** 439- (2016)

32. Multiple caloric effects in geometrically frustrated 114 CaBaCo4O7 Cobaltite. *by* C. D., Das A. K., Adyam V. **Journal of Magnetism and Magnetic Materials** 418 76-80 (2016)

33. Observation of Griffiths-like phase and its tunability in La2Ni1 xCoxMnO6 (0 x 1) nanoparticles *by* Adyam V., Murthy J. K., Chandrasekhar K. D. **Journal of Magnetism and Magnetic Materials** 418 2-8 (2016)

34. Katoch R. , Sekhar C. D., Scott J. F., Gupta R. , Adyam V., Garg A . Spin phonon interactions and magnetodielectric effects in multiferroic BiFeO3 PbTiO3 **Journal of Physics: Condensed Matter** 28 075901- (2016)

35. Thirmal C. , Biswas P. P., Noh T. W., Shin Y. J., Giridharan N. V., Adyam V., ,Murugavel P. Study of ferroelectric characteristics of diisopropylammonium bromide films *by***Journal of Applied Physics** 120 124107- (2016)

36. A study of magnetic ordering in multiferroic hexagonal Ho1-xDyxMnO3 *by* Adyam V., Magesh J. , Murugavel P. , Krishnamurthy J. , Prellier W. **Journal of Applied Physics** 117 074104- (2015)

37. A study of magnetic ordering in multiferroic hexagonal Ho {sub 1-x} Dy {sub x} MnO {sub3} *by* Adyam V., Magesh J. , Murugavel P. , Krishnamurthy J. , Prellier W. **Journal of Applied Physics** 117 - (2015)

38. Giant magnetocaloric effect in Gd2NiMnO6 and Gd2CoMnO6 ferromagnetic insulators *by* Adyam V., Murthy J. K., Chandrasekhar K. D., Mahana S. , Topwal D. **Journal of Physics D: Applied Physics** 48 355001- (2015)

39. Investigation of the intrinsic magnetodielectric effect in La2CoMnO6: role of magnetic disorder *by* Adyam V., Murthy J. K., Chandrasekhar K. ., Murugavel S. **Journal of Materials Chemistry C** 3 836-843 (2015)

40. J. Krishna Murthy and A.Venimadhav , "Multicaloric effect in multiferroic Y_2CoMnO_6" **J Phy D Appl Phys 47** 445002 (2014)

41. R.K. Sahoo, P. Jeyapandiarajan, K Devi Chandrasekhar, B.S.S. Daniel, **A. Venimadhav**, S.B. Sant and C. Jacob, "Single-step synthesis of graphene-carbon nanofiber hybrid material and its synergistic magnetic behavior" **Journal of Alloys and Compounds** 615 348 (2014)

42. K. Devi Chandrasekhar, A. K. Das, and **A. Venimadhav** "Magnetic Glassy Behavior of $Pr_{0.6}Ca_{0.4}MnO_3$ Nanoparticles: Effect of Intra and Interparticle Magnetic Interaction on Magnetodielectric Property", **J Phys Chem C**, 118 27728, (2014) J. Krishna Murthy, K. Devi Chandrasekhar , S. Murugavel and **A.Venimadhav** "Investigation of intrinsic magnetodielectric effect in La_2CoMnO_6: Role of magnetic disorder" **J Mat Chem C**, 3 836 (2014)

43. J. Krishna Murthy, K. Devi Chandrasekhar, H. D. Yang, J. Y. Lin and **A.Venimadhav** "Metamagnetic behaviour and effect of field cooling on sharp magnetization jumps in multiferroic Y_2CoMnO_6" **Euro Phy Lett 108** 27013 (2014)

44. K. Devi Chandrasekhar, A. K. Das, **A. Venimadhav** "Dielectric and magnetodielectric properties of R2NiMnO6 (R = Nd, Eu, Gd, Dy and Y)" **J. Am.Cer.Soc** 97, 2858 (2014)

45. Devi Chandrasekhar, K.,Mallesh, S., Krishna Murthy, J., Das, A.K., **Venimadhav, A.** "Role of defects and oxygen vacancies on dielectric and magnetic properties of Pb^{2+} ion doped $LaFeO_3$ polycrystalline ceramics", **Phy B** 448 304 (2014)

46. J. Krishna Murthy and **A.Venimadhav**, "Magnetization reversal phenomena and bipolar switching in $La_{1.9}Bi_{0.1}FeCrO_6$", **Phy B** 448 162 (2014)

47. H. Singh, T. Ono, T. Chakraborty, K. Srikanth, A. Venimadhav, R. Chandra, C. Mitra, U. Kuma "A study of crossover from 3D ferrimagnetic bulk NiCr2O4 compound into 2D spin-glass-like nanophase" **J Nanopart. Res** 16, 2354 (2014)

48. J. Krishna Murthy and **A.Venimadhav**, "Giant zero field cooled spontaneous exchange bias effect in phase separated $La_{1.5}Sr_{0.5}CoMnO_6$**" Appl. Phys. Lett** 103, 252410 (2013)

49. K. Devi Chandrasekhar, A. K. Das, A. Venimadhav "Magnetic field induced dielectric relaxation in the

strain glass state of $Pr_{0.6}Ca_{0.4}MnO_3$" **J. Appl. Phys**. 113, 173907 (2013)

50. J. Krishna Murthy and **A. Venimadhav**, "Reentrant cluster glass behavior in La_2CoMnO_6 nanoparticles" **J. Appl. Phys**. **113**, 163906 (2013)

51. K. Devi Chandrasekhar, A. K. Das, **A. Venimadhav,** The extrinsic origin of magnetodielectric effect in La2NiMnO6 double perovskite **J. Phys.: Condens. Matter** 24 495901 (2012)

52. K. Devi Chandrasekhar, A. K. Das, **A. Venimadhav,** Spin glass behaviour and extrinsic origin of magnetodielectric effect in non-multiferroic La2NiMnO6 nanoparticles **J. Phys: Condens. Matter** 24 376003 (2012)

53. **A. Venimadhav**, Devi Chandrasekar and J. Krishna Murthy "Intrinsic and extrinsic contributions to magnetodielectric effect in double perovskite La_2CoMnO_6 nanoparticles" **Appl. NanoSci**.2, 69 (2012)

54. J. Krishna murthy, C. Mitra, S. Ram **and A.Venimadhav** "Temperature dependent magnetic and dielectric properties of M-type hexagonal BaFe12O19 nanoparticles**" J. Alloys and Compounds 545** 225 **(2012)**

55. J. Krishna Murthy and A. Venimadhav, "Magnetodielectric behavior in La_2CoMnO_6 nanoparticles" **J. Appl. Phys**. **111**, 024102 **(2012)**

56. Saha, R., Srinivas, V., **Venimadhav, A**, Observation of magnetic cluster phase above Curie temperature in Fe 2CrAl Heusler alloy *by*. **J.Mag.Mag.Mat 324** 1296-1304 (**2012**)

57. H. B. Zhao, D. Talbayev, X. Ma,Y. H. Ren, A. Venimadhav, Qi Li, and G. Lupke "Coherent Spin Precession via Photoinduced Antiferromagnetic Interactions in $La_{0:67}Ca_{0:33}MnO_3$" **Phys. Rev .Lett 107**, 207205 (**2011**)

58. K. Devi Chandrasekhar, A. K. Das, **A. Venimadhav,** Large magnetodielectric response in $Pr_{0.6}Ca_{0.4}MnO_3$/ polyvinylidene fluoride nanocomposites, **App. Phy. Lett 98**, 122908 **(2011)**

59. Debraj Choudhury, Abhijit Hazarika, **A. Venimadhav**, Chandrasekhar Kakarla, Kris T. Delaney, P. Sujatha Devi, P. Mondal, R.Nirmala, J. Gopalakrishnan, Nicola A. Spaldin, Umesh V. Waghmare, D. D. Sarma "Electric and magnetic polarizabilities of hexagonal Ln_2CuTiO_6 (Ln = Y, Dy, Ho, Er, Yb)" **Phys. Rev B 82** 134203 **(2010)**

60. Debraj Choudhury, **A. Venimadhav**, Chandrasekhar Kakarla, Kris T. Delaney, P. Sujatha Devi, P. Mondal, R. Nirmala, J. Gopalakrishnan, Nicola A. Spaldin, Umesh V. Waghmare, and D. D. Sarma; Unusual dielectric response in B-site size-disordered hexagonal transition metal oxides, **Appl. Phys. Lett**. **96**, 162903 (2010)

61. K. Devi Chandrasekhar, **A. Venimadhav,** and A. K. Das, High dielectric permittivity in semiconducting $Pr_{0.6}Ca_{0.4}MnO_3$ filled polyvinylidene fluoride nanocomposites with low percolation threshold, **Appl. Phys. Lett**. 95, 062904 (**2009**)

62. Shufang Wang, **A. Venimadhav**, Shengming Guo, Ke Chen, Qi Li, A. Soukiassian, Darrell G. Schlom, Michael B. Katz, X. Q. Pan, Winnie Wong-Ng, Mark D. Vaudin, and X. X. Xi, "Structural and thermoelectric properties of of $Bi_2Sr_2Co_2O_y$ thin films on $LaAlO_3$ (100) and fused silica substrates" **Appl. Phys. Let**t. **94**, 022110 (**2009**)

63. Y.H. Ren, M. Ebrahim, H.B. Zhao,G. Läupke, Z.A. Xu, **V. Adyam**, Qi Li, "Time-resolved optical studies of spin and quasiparticle dynamics in colossal magnetoresistance materials: $La_{0.67}Ca_{0.33}MnO_3$, $La0._{67}Sr_{0.33}MnO_3$ and Sr_2FeMoO_6" **Phys. Rev. B 78**, 014408 (**2008**)

64. Tetiana Nosach, Gabriella Mullady, Steven Greenbaum, **A. Venimadhav**, Qi Li, Yuhang Ren "Angular dependence of spin-wave resonance and relaxation in half-metallic Sr2FeMoO6 films" **J. App. Phys**. 103. 07E311 (2008)

65. A.K. Singh, S. D. Kaushik, Brijesh Kumar, P. K. Mishra, **A. Venimadhav**, V. Siruguri, and S. Patnaik "Substantial magnetoelectric coupling near room temperature in $Bi_2Fe_4O_9$", **Appl. Phys. Lett. 92**, 132910 (**2008**)

66. Y. H. Ren, M. Trigo, R. Merlin, **A. Venimadhav**, and Qi Li "Generation and detection of coherent longitudinal acoustic phonons in the $La_{0.67}Sr_{0.33}MnO_3$ thin films by femtosecond light pulses" **Applied Physics Letters**, **87**, 251918 (**2007**)

67. Shaoying Kang, **Venimadhav Adyam**, Shizhuo Yin, Qi Li, Yong Zhu, "$Bi_3Fe_4Ga_1O_{12}$ garnet properties and its application to ultrafast switching in the visible" **IEEE trans Mag 43**,3656 (**2007**)

68. A. Venimadhav, Fhlak Share, P. M. Attfields, M. G. Blamire, "High Curie temperature in epitaxial

Sr_2CrWO_6 thin film" **Solid State Communications 138**,314 (**2006**)

69. D. Talbayev, H. Zhao, and G. Läupke, **A. Venimadhav** and Qi Li "Photoinduced coherent magnetization precession in epitaxial $La_{0:67}Ca_{0:33}MnO_3$ films" **Phys.Rev. B** 73, 014417 (2006)
70. **A.Venimadhav**, A. Soukiassian,, X. X. Xi, D. G. Schlom, Minhyea Lee, N. P. Ong, Q. Li "Structural and transport properties of epitaxial Na_xCoO_2 thin films" **Appl. Phys. Lett**. 87, 172104 (2005)
71. **A.Venimadhav**, K. A. Yates, M. G. Blamire "Scanning Raman spectroscopy for characterizing compositionally spread Films" **J. Combinatorial Chemistry** Vol 7 p85 (2005)
72. Falak Sher, **A. Venimadhev**, Mark G. Blamire, K. Kamenev, and J. Paul Attfield "Cation Size Variance Effects in Magnetoresistive Sr_2FeMoO_6 Double Perovskites" **Chemistry of Materials 17** 176 (2005)
73. Sher. F, Williams. AJ, **Venimadhav. A,** etal. Synthesis, structure, and properties of two new Ruddlesden-Popper phase analogues of SFMO (Sr2FeMoO6) **Chemistry of Materials** 17 1792 (2005)
74. Falak Sher, **A. Venimadhav**, M. G. Blamire, B. Dabrowski, S. Kolesnik and J. Paul Attfield "Structural, Magnetic and Transport Properties of $Sr_2Fe_{1-x}Mg_xMoO_6$ ($0 < x < 1$) Double Perovskites" **SOLID STATE SCIENCES** 7 (8): 912-919 AUG 2005
75. **A. Venimadhav**, M. E. Vickers, M. G. Blamire "Ferromagnetic spin ordering in disordered Sr_2FeMoO_6 films" **Solid State Communication**, 130, 631 (2004)
76. **A. Venimadhav**, Fhlak Share, P. M. Attfields, M. G. Blamire, "Oxygen assisted deposition of Sr_2FeMoO_6 thin films on $SrTiO_3$ (1 0 0) " **J Mag. Mag. Mat** 269, 101 (2004)
77. **A. Venimadhav**, M.S. Hegde, R. Rawat and I. Das " Magneto transport property in thin films of Charge ordered materials" **J. Appl. Phys** 89**,** 8057 (2002)
78. **A. Venimadhav**, I chaitanyalakshmi and M. S. Hegde, "Electrical transport properties of $RNiO_3$(R= La,Pr,Nd,Sm) epitaxial thin films" **Mater. Res. Bull** 37, 201 (2002).
79. M. Sahana, **A.Venimadhav,** M.S. Hegde, K. Nenkov, U. K. Rößler, K. Dörr and K. -H. Müller **"**Magnetic properties and specific heat of $LaMn_{1-x}Ti_xO_{3+\delta}$ ($0<x\leq0.2$)" **J. Mag. Mag.Mat**, 260, 361 (2002)
80. **A.Venimadhav**, M.S. Hegde, R. Rawat, I. Das, P.L. Paulose and E.V Sampathkumaran "Influence of cuprate spacer layer on electrical and magnetic transport properties of $La_{0.6}Pb_{0.4}MnO_3/La_4BaCu_5O_{13+x}$ multilayers" **Phys. Rev. B** 63, 214404 (2001)
81. **A. Venimadhav,** M.S. Hegde, R. Rawat and I. Das "Enhancement of magnetoresistance in $La_{0.67}Ca_{0.33}MnO3/Pr_{0.7}Ca_{0.3}MnO3$ multilayers" **J. Alloys and Compds** 326, 270 (2001)
82. **A.Venimadhav**, M. S. Hegde, V. Prasad and S. V. Subramanyam, "Enhancement of magnetoresistance in manganite multilayers**" J.Phys D: Appl. Phys**, 33, 2921 (2000)
83. **A. Venimadhav**, P. S. Herle, Vedvyas, C. Sivakumara and M.S. Hegde " Anisotropic electrical transport in $La_4BaCu_5O_{13+x}$, $La_4BaCu_4NiO_{13+x}$ epitaxial thin films" **Appl. Phys. Lett** 75, 1598 (1999).

Research Area: Energy Storage

84. Structural and electrochemical kinetics of Na Fe Mn O thin-film cathode: a synergistic effect of deposition conditions by Nayak D., Ghosh S. , Adyam V., **Ionics**, 27 Page: 2421-2430 (2021)
85. S Janakiraman, A Agrawal, R Biswal, A Venimadhav, An amorphous polyvinylidene fluoride-co-hexafluoropropylene based gel polymer electrolyte for sodium-ion cells **Applied Surface Science Advances** 6, 100139 (2021)
86. Revisiting and enhancing electrochemical properties of SnO 2 as anode for sodium-ion batteries by Biswal R., Nayak D., Chaudhar N. V., Ghosh S. , Adyam V., **Journal of Solid State Electrochemistry**, 25 Page: 561-573 (2021)
87. Rupali Singh, S Janakiraman, Mohammed Khalifa, S Anandhan, Sudipto Ghosh, A Venimadhav, K Biswas, A high thermally stable polyacrylonitrile (PAN)-based gel polymer electrolyte for rechargeable Mg-ion battery, **Journal of Materials Science: Materials in Electronics**, 1-14, 2020
88. R Biswal, D Nayak, S Janakiraman, NVP Chaudhary, S Ghosh, V Adyam, Revisiting and enhancing electrochemical properties of SnO 2 as anode for sodium-ion batteries, **Journal of Solid State Electrochemistry**, 1-13, 2020
89. JK Dora, D Nayak, S Ghosh, V Adyam, N Yedla, TK Kundu, A facile and green synthesis approach to derive highly stable SiO x-hard carbon based nanocomposites for use as the anode in lithium-ion batteries, **Sustainable Energy & Fuels** 2020, 4, 6054-6065

90. Janakiraman, S., Khalifa, M., Biswal, R., Ghosh, S., Anandhan, S., Venimadhav, A., High performance electrospun nanofiber coated polypropylene membrane as a separator for sodium ion batteries, **Journal of Power Sources** (2020) 460, DOI: 10.1016/j.jpowsour.2020.228060

91. Singh, R., Janakiraman, S., Agrawal, A., Ghosh, S., Venimadhav, A., Biswas, K. An amorphous poly (vinylidene fluoride-co-hexafluoropropylene) based gel polymer electrolyte for magnesium ion battery, **Journal of Electroanalytical Chemistry** (2020) 858. DOI: 10.1016/j.jelechem.2019.113788

92. Singh, R., Janakiraman, S., Khalifa, M., Anandhan, S., Ghosh, S., Venimadhav, A., Biswas, K. An electroactive β-phase polyvinylidene fluoride as gel polymer electrolyte for magnesium–ion battery application, **Journal of Electroanalytical Chemistry** (2019) 851, art. no. 113417, DOI: 10.1016/j.jelechem.2019.113417

93. Agrawal, A., Janakiraman, S., Biswas, K., Venimadhav, A., Srivastava, S.K., Ghosh, S. Understanding the improved electrochemical performance of nitrogen-doped hard carbons as an anode for sodium ion battery, **Electrochimica Acta** (2019) 317, pp. 164-172. DOI: 10.1016/j.electacta.2019.05.158

94. D Nayak, P K Jha, S Ghosh, V Adyam, Aluminium substituted β–type NaMn1-xAlxO2: A stable and enhanced electrochemical kinetic sodium-ion battery cathode, **Journal of Power Sources** 438, 227025, 2019.

95. An electroactive -phase polyvinylidene fluoride as gel polymer electrolyte for magnesium ion battery application *by A*dyam V., Singh R., Ghosh S., Janakiraman S., Khalifa M., Anandhan S., Biswas K. **Journal of Electroanalytical Chemistry 1**13417- (2019)

96. A porous poly (vinylidene fluoride-co-hexafluoropropylene) based separator-cum-gel polymer electrolyte for sodium-ion battery (vol 826, pg 142, 2018) *by* Adyam V., Ghosh S., Janakiraman S., Padmaraj O. **Journal of Electroanalytical Chemistry** 842 214-214 (2019)

97. Asymmetric reaction pathway of Na+-ion during fast cycling in - and -Fe2O3 thin film anode for sodium-ion battery *by* Puravankara S., Ghosh S., Adyam V., Nayak D. **Ionics** 1-12 (2019)

98. Electrochemical characterization of a polar -phase poly (vinylidene fluoride) gel electrolyte in sodium ion cell *by* Adyam V., Ghosh S., Janakiraman S., Surendran A., Biswal, Anandhan S. **Journal of Electroanalytical Chemistry** 833 411-417 (2019)

99. Electrospun electroactive polyvinylidene fluoride-based fibrous polymer electrolyte for sodium ion batteries *by* Adyam V., Janakiraman S., Surendran A. , Biswal R., Ghosh S. , Anandhan S. **Materials Research Express** 6 086318- (2019)

100. PVDF/halloysite nanocomposite based non wovens as gel polymer electrolyte for high safety lithium ion battery *by* Adyam V., Khalifa M. , Janakiraman S. , Ghosh S., Anandhan S. **Polymer Composites** 40 2320-2334 (2019)

101. Understanding the improved electrochemical performance of nitrogen-doped hard carbons as an anodefor sodium ion battery *by* Agrawal A., Janakiraman S., Biswas K., Adyam V., Srivastava S. K., Ghosh S. **Electrochimica Acta** 317 164-172 (2019)

102. A new strategy of PVDF based Li-salt polymer electrolyte through electrospinning for lithium battery application *by* Adyam V., Janakiraman S., Surendran A. , Ghosh S., Anandhan S. **Materials Research Express** 6 035303- (2018)

103. A porous poly (vinylidene fluoride-co-hexafluoropropylene) based separator-cum-gel polymer electrolyte for sodium-ion battery *by* Adyam V., Janakiraman S., Padmaraj O., Ghosh S. **Journal of Electroanalytical Chemistry** 826 142-149 (2018)

104. ELECTROCHEMICAL PROPERTIES AND FIRST PRINCIPLE ANALYSIS OF NAX [MyMn1-y] O2 (M= Fe, Ni) CATHODE *by* N D., Sarkar T., Chaudhary N. P., Ghosh S. , Adyam V., Bharadwaj **Solid State Electrochemistry** 22 1079-1089 (2018)

105. Electroactive poly(vinylidene fluoride) fluoride separator for sodium ion battery with high coulombic efficiency *by* S., Adyam V. , Surendran A. , Ghosh S. , Anandhan S. **Solid State.Ionics** 292 130-135 (2016)

Seminar/Conference/Workshop/Webinar Organized

- National Work shop on Lithium ion battery technology and Mathematical modeling 2016

- SPARC-UKIERI workshop on Thin Film Solid State Batteries Organized by IIT Kharagpur and Univ of Cambridge on 30 Sept 2020. No of participants -130

Conference Reviewed publications (Partial)

1. Janhavi P Joshi, A. anand, A. Venimadhav, M. S. Hegde, S. V. Bhat, P. Satyavathi, and V. N. Bhoroskar, " Bulk pinning and surface quality enhancement in 1 MeV electron irradiated single crystalline YBCO films", Pro. Solid state. Symp. 42, 471 (1999)
2. Shaoying Kang, Shizhuo Yin, Yong Zhu, Qi Li, and Venimadhav Adyam,"Investigate the doped magnetic garnets and their applications to ultrafast switching" Proc. SPIE Int. Soc. Opt. Eng. 6314, 63141R (2006)
3. A. Venimadhav, Z. Ma, Qi Li, A. Soukiassian X. X. Xi, D. G. Schlom, R. Arroyave, Z. K. Liu, Minhyea Lee and N. P. Ong "Thermoelectric properties of epitaxial and topotaxial Na_xCoO_2 thin films" Materials Research Society Symposium Proceedings 886, pp. 65-74 (2006)
4. Maheswar Panda, Venimadhav Adyam, V. Srinivas, A. K. Thakur "Synthesis And Characterization Of Ni-PVDF Nano-Composites" AIP Conf. Proceedings 1027, 43 (2008)
5. K. Devi Chandrasekhar, A. Venimadhav**,** and A. K. Das "Dielectric properties of percolative manganite/polyvinylidene fluoride nanocomposites under various processing conditions" To appear in AIP Conf. Proceedings (2010)
6. K. Devi Chandrasekhar, A. K. Das, A. Venimadhav**,** Magnetic properties of La_2NiMnO_6 nanoparticles, To appear in AIP Conf. Proceedings 1447, 1237 (2012)
7. A.Venimadhav, D. A. Tenne , M. J. Wilson, P. Schiffer , Qi Li, J. H. Lee Darrell G. Schlom and X. X. Xi "Growth and magnetic properties of La_2NiMnO_6 epitaxial thin films" To appear in AIP Conf. Proceedings (2011)
8. J Krishna Murthy, Venimadhav, A. "Magnetocaloric effect in double pervoskite La2CoMnO6" 1447 1239 (2012)
9. Murthy, J.K., Venimadhav, A. "Unusual magnetodielectric response in La2CoMnO6 nanoparticles" *AIP Conference Proceedings* 1536 , pp. 1053 (2013)
10. Murthy, J.K., Venimadhav, A. "Size dependent magnetic properties of double perovskite La 2CoMnO6 nanoparticles" *AIP Conference Proceedings* 1536 , pp. 1053 (2013)
11. Chandrsekhar, K.D., Karthikeyan, S., Das, A.K., Venimadhav, A."High dielectric permittivity in BaFe12O19/ polyvinylidene fluoride composites" *AIP Conference Proceedings* 1536 , pp. 788 (2013)
12. Chandrasekhar, K.D., Manjunatha, P.M., Chaudhary, N.V.P.,Venimadhav, A."Study of percolation behavior in semiconducting La0.95MnO3/polyvinylidene fluoride nanocomposites" *AIP Conference Proceedings* 1536 , pp. 754 (2013)
13. Field induced martensitic phase transition in nonstoichoimetric $Ni_{45}Mn_{44}Sn_{11}$ Heusler alloy, T. Chabri ,A. Venimadhav, and T. K. Nath, *AIP Conference Proceedings* 1832 , 030008 (2017)
14. Tailoring the Permittivity in Tellurium Dioxide By Co-Doping, V Keerthana, V Adyam 236th ECS Meeting, (2019)
15. Superior electrochemical performance of NaFe0. 5Mn0. 5O2 thin film electrode fabricated by pulse laser deposition D Nayak, S Majumdar, S Ghosh, V Adyam, Materials Today: Proceedings (2020)
16. Novel dual core shell Fe3O4@ C@ polypyrrole (PPy) composite for sodium ion batteries, R Biswal, V Shukla, S Janakiraman, S Ghosh, V Adyam, Materials Today: Proceedings (2020)
17. Investigation of current transport in Galfenol based Schottky diodes, G Bhattacharya, NVP Chaudhary, SS Takri, RR Kumar, A Venimadhav, Materials Today: Proceedings (2020)

Conferences Proceedings and Presentations (Last 3 years)

- **Invited Talk** on "*Magnetic frustration and electric polarization in 114 Cobaltates"* at Department of Physics, Pondicherry University, Pondicherry, India (23-11-2020 to 24-11-2020), Type: Invited Lecture, Event Name: Webinar on Magnetism and Magnetic Materials- 2020 (MMM-2020)

- **Invited Talk** on "*Spintronics and importance of Antiferromagnets*" at Department of Physics, School of Sciences, National Institute of Technology Andhra Pradesh, India (05-10-2020 to 09-10-2020), Type: Invited Lecture, Event Name: NIT AP Faculty Development Program, Oct-2020
- **Invited Talk** on "*Room Temperature Exchange Bias In Magnetic Alloy /Magnetoelectric Oxide Heterostructure Grown By PLD* " First Indian Material conclave and 30th Annual General Meeting of MRSI invited as Multiferroic symposium co- chair 2019
- **Invited talk** on "Multiferroicity in frustrated swedenborgites" ICMAGMA at NISER Bhubaneswar 2018
- Seminar invited Dipolar ordering in frustrated swedenborgites at IIT BHU, Dept of Metallurgy
- **Invited Talk** on "Room temperature positive exchange bias in magnetic alloy/magnetoelectric oxide heterostructures" ', IIT Madras, iCold-2017 20 Nov-22 Nov, 2017
- **Invited Talk** on "Relaxor behavior in TiO2 with Dipolar doping", IGCAR, Kalpakam, National Conf on Thermo Physical Properties, during 6Nov-8 Nov, 2017
- **Invited Talk** on "Multiferroicity in 114 frustrated magnets" ', S.N.Bose Institute, Recent trends in Condensed matter physics' during 31Oct-3Nov, 2017 **Invited Talk** on "Multiferroicity in 114 Cobaltates" ', IIT, Roorkee, Recent Advances in Strongly Correlated Electronic Materials' during 8-10, February, 2017
- **Invited Talk** on "Magnetoelectric Based Magnetic Sensor" Materials for Biomedical and Specialty Applications', NIT Surathkal, 21 Jan-2017
- **Invited Talk**, "Spontanious exchange bias effect" NIT Roorkela, 2016
- **Invited talk**, "Multiferroicity in highly frustrated 114 cobaltates" at Emerging trends in Advanced Functional materials-2016, IoP, Bhubaneswar.
- **Invited Talk** on "Doping a dipole into an incipient ferroelectric: A route to obtain ferroelectricity"7th APCTP-Academy Joint Meeting on Multiferroics, Orange County Resort, COORG, Nov 2015.
- **Invited Talk** on "Spontaneous Exchange Bias Effect" Current trends in condensed matter physics, NISER Bhubaneswar, 2015