LIQUID CRYSTAL RESEARCH CENTRE (LCRC-R&D)

1.0 Introduction to the Center

The Liquid Crystal Research Centre headed by Prof. VGKM Pisipati in K L University, has been working in the area of liquid crystals from the past four years. The major work done in our laboratory is design, synthesis of new materials, characterization of different liquid crystalline phases and physical properties studies like dilatometry, optical birefringence, molecular polarizabilities, dielectric anisotropies, spontaneous polarization for the case of ferroelectric liquid crystals. All these studies have been carried out on different variety of Schiff base liquid crystal compounds such as nO.m, n.Om, nO.Om, n.m., PBnA, PBOnA, and TBnA series. The work is not only confined to monomers, in view of the importance it is extended to dimeric liquid crystals.

Recently, our group has entered into new fields in application point of view such as nanotechnology and liquid crystal antennas. So, far we have communicated a good number of publications in the area of liquid crystal antennas and some prototype models are fabricated and tested.

Associated Members of LCRC-R&D

S.No	Employee Number	Name	Designation	Experience in KLU	Research Area
1	1719	Prof. VGKM Pisipati	Director	4.5 Years	Liquid Crystals
2	1737	B.T.P.Madhav	Assoc. Professor	4.5 Years	Antennas
3	1751	D. Madhavi latha	WOS	4 Years	Liquid Crystals

2.0 Details of the equipment available in the center

Serial Number	Department	Name of the Equipment	Purpose of the Equipment	Organization from which the equipment is purchased	Year	Cost of the equipment
1	ECE	Differential Scanning calorimeter	To find the properties of Liquid crystals	Perkin Elmer	2008	20 Lakhs
2	ECE	Polarizing Microscope	To verify Phase changes in Liquid crystals	SV Techs	2008	1,55,480Rs
3	ECE	Electronic Balance	To find mass of Liquid crystal compound samples	K-Roy	2009	11,440 Rs
4	ECE	LCAS-III Spectrometer with Accessories	Liquid crystal Material and Analysis	LC Vision LLC	2010	34,000$
5	ECE	Lock in Amplifier	Gain Measurements	Stanford Research Systems	2011	8 Lakhs
6	ECE	Index Power Systems	Uninterrupted Power Supply	Index Power Systems	2012	11,900 Rs
7	ECE	LG-REF-205 KL4ERLZPST	Mega Shopee	To Preserve Liquid Crystal Materials	2012	10,100 Rs

Photograph of DSC and its Interfacing at LCRC-R&D

LCAS Setup

3.0 List of software packages being used in the Lab

S.No	Name of the Software	Name of the Manufacturer	Version	No. of User Licenses
1	Pyris	Perkin Elmer	V9.0.1	1
2	Cranes	Cranes Software International Ltd	V1.0	1
3	Software Utilities	Perkin Elmer	V7.0	1
4	HFSS	Ansoft	V11.0	1
5	LCA'S	LCAS Systems	V4.0	1
6	Matlab	Mathworks	10	2

4.0 List of faculty connected with the Lab

S.No	Employee Number	Name	Designation	Experience in KLU	Research Area
1	1719	Prof. VGKM Pisipati	Director	4.5 Years	Liquid Crystals
2	1737	B.T.P.Madhav	Assoc. Professor	4.5 Years	Antennas
3	1751	D. Madhavi latha	WOS	4 Years	Liquid Crystals

5.0 List of Sponsored Research Projects being undertaken/completed in the Lab

S.No	Name of the project	Type of project	Faculty Member/Principal Investigator	Amount in Rs
1	Phase transition studies on dimeric liquid crystals	Department of Science and Technology (Grant No: SR/S2/CMP-0071/2008)	Prof. VGKM Pisipati	26,00000
2	Optical studies on nano particle doped liquid crystals	DST-WOS-A through grant No.SR/WOS-A/PS-05/2010	D. Madhavi Latha	10.96,000
3	Substrate Permittivity effects on the design of compact and broadband antennas	DST-Fast Track Scheme (Applied)	B.T.P.Madhav	23,00,000
4	Design of low cost amateur radio satellite compatible Transceiver Setup's for operation and Quick Establishment of communication platforms for during disaster situation	AICTE under Research Promotion Scheme	B.T.P.Madhav (Co-Investigator)	9,28,000
5	Design and Analysis of EBG Structured Slot Antenna for Reduction of Size and Surface Wave Losses	In-House Funding Scheme	B.T.P.Madhav	5,00,000

74, 24,000/-

6.0 List of Publications Related to the center

Publications in Liquid crystals from 2009-2011

1. K. Fakruddin, R. JeevanKumar, P. V. Datta Prasad, and V. G. K. M. Pisipati; Orientational orderparameter – 1 a birefringence study; Mol. Cryst. Liq. Cryst., Vol. 511, 133-145, 2009

2. K. Fakruddin, R. Jeevan Kumar, P. V. Datta Prasad and V. G. K. M. Pisipati; Phase transition and molecular polarizability studies in lower homologues of alkoxybenzylidene alkoxyanilies;Mol. Cryst. Liq. Cryst., Vol. 511, 146–157, 2009

3. P. V. Datta Prasad, M. Ramakrishna Nanchara Rao,J. Lalitha Kumari, and V. G. K. M. Pisipati; Simultaneous observations of textural characterizations and birefringence in liquid crystals; Mol. Cryst. Liq. Cryst., Vol. 511, 96–101, 2009

4. P. V. Datta Prasad and V. G. K. M. Pisipati; Simple, accurate and low cost optical techniques for the measurement of 1. birefringence in liquid crystals and 2. variation of the angle of the small angled prism with temperature; Mol. Cryst. Liq. Cryst.,Vol. 511, 102–111, 2009

5. P. V. Datta Prasad, M. Ramakrishna Nanchara Rao, and V. G. K. M. Pisipati; Phase transition studies in liquid crystals across i-n and n-sc phases in alkoxy benzoic acids – density measurements; Mol. Cryst. Liq. Cryst., Vol. 511, 112–120, 2009

6. P. Pardhasaradhi, C. S. V. S. Murthy, J. Lalitha Kumari, P. V. Datta Prasad, M. Srinivasulu, and V. G. K. M. Pisipati; Orientational order parameter-II– a birefringence study; Mol. Cryst. Liq. Cryst., Vol. 511, 121–132, 2009

7. P.V. Datta Prasada, M. Ramakrishna Nanchara Raoa, J. Lalithakumari, V.G.K.M. Pisipati: Simultaneous characterisation and dilatometry studies on liquidcrystalline n-(p-n-decyloxy and undecyloxybenzylidene)-p-toluidines; Physics and Chemistry of Liquids, 47, 2, 2009, 123–132

8. V. G. K. M. Pisipati and P. V. Datta Prasad; Orientational order parameter in homogeneous binarymixtures of 6o.4+4o.6 of n-(p-alkoxybenzylidene)- p-n-alkyl anilines, (no.m)series – a birefringence method; Mol. Cryst. Liq.Cryst., 506, 13–21, 2009

9. B. Sreedevi[1], P. V. Dattaprasad Chalapathi,Kotikalapudi,V. G. K. M. Pisipati, and D. M. Potukuchi; Influence of hydrogen bonding on device parameters and field response in n_ and smc_ phasesof a ferroelectric liquid crystal, HBFLC: 12bpa; Mol. Cryst. Liq. Cryst., Vol. 515, pp. 71–98, 2009

10. S. Lakshminarayana, K. Gouthami, V. G. K. M. Pisipati, N. V. S. Rao & G. Venkata Rao; Accurate Method for the Determination of Phase Transitions in Liquid Crystals with Photoacoustic Technique; Mol.Cryst.Liq.Cryst. 511, 50-58, 2009

11. M.Ramakrishna Nanchara Rao, P.V.Datta Prasad V.G.K.M.Pisipati; Orientational order parameter in alkoxybenzoic acids- opticalstudies; Mol.Cryst.Liq.Cryst. 528, 47-61, 2010

12. D. Madhavi Latha, B. T. P. Madhav, P. V. Datta Prasad and V. G. K. M. Pisipati: Estimation of thermodynamic parameters and molecular free length in liquid crystalline N-(*p*-*n*-alkoxybenzylidene)-*p*-*n*-pentyloxy aniline (nO.O5) compounds, *Journal of Molecular Liquids* 156: 120-123 (2010).

13. D. Madhavi Latha and V. G. K. M. Pisipati: Estimation of thermodynamic parameters from thermal expansion coefficient of phenylbenzylidene alkyl anilines, *Journal of Molecular Liquids* 153: 167-169 (2010).

14. V. G. K. M. Pisipati, D. Madhavi Latha, B. T. P. Madhav and P. V. Datta Prasad: Computation of molecular free length L_f and molecular radius m_r of *p*-*n*-alkoxy benzoic acids, *Molecular Crystals and Liquid Crystals* 524: 166-175 (2010).

15. K. Fakruddin, R. Jeevan Kumar, V. G. K. M. Pisipati, D. Madhavi Latha, B. T. P. Madhav and P. V. Datta Prasad: Phase transitions and thermodynamic parameters of N-(*p*-*n*-octyloxybenzylidene)-*p*-*n*-alkoxyanilines – A Dilatometric study, *Molecular Crystals and Liquid Crystals* 524: 102-118: (2010).

16.D. Madhavi Latha, V. G. K. M. Pisipati and P. V. Datta Prasad: Thermodynamic parameters of nO.m liquid crystal compounds – A Dilatometric study, *Molecular Crystals and Liquid Crystals* 524: 144-165 (2010).

17. V. G. K. M. Pisipati, D. Madhavi Latha, B. T. P. Madhav and P. V. Datta Prasad: Nematic to smectic-A transition (NSA), location of tri critical point (TCP) in nO.m series – A birefringence study, *Z. Naturforsch A* 65a: 335-341 (2010).

18. 1. M. Ramakrishna Nanchara Rao, P. V. Datta Prasad, D. Madhavi Latha and V. G. K. M. Pisipati: Phase transition studies and thermodynamic parameters of four members of nO.m series - A Dilatometric study, *Molecular Crystals and Liquid Crystals* (2011):

19. D. Madhavi Latha, V. G. K. M. Pisipati, J. Lalitha Kumari and P.V. Datta Prasad: Thermodynamic parameters of n-(*p*-*n*-alkoxybenzylidene)-*p*-*n*-(butyloxyanilines), (nO.O4) liquid crystal compounds - A Dilatometric study, *Journal of Molecular Liquids,163(1), 14-19* (2011)

20. D. Madhavi Latha, V. G. K. M. Pisipati, K. Fakruddin, M. Ramakrishna Nanchara Rao and P. V. Datta Prasad: Estimation of anhormonic and Beyer's non-linearity parameter (*B*/*A*) for *p*-*n*-alkoxy benzioc acids – A Dilatometric study, *International Journal of Applied Science and Technology*, 3, 48-56 (2011)

21. D. Madhavi Latha, V. G. K. M. Pisipati, M. Ramakrishna Nanchara Rao and P. V. Datta Prasad: Estimation of thermodynamic and Beyer's parameter (*B*/*A*) in Liquid Crystalline 5.m, 5O.m, 5.Om, 5O.Om compounds with m = 5 and 16, *Physica B* 406: 3821-3824 (2011)

22. M. V. V. Nagi Reddy, V. G. K. M. Pisipati, D. Madhavi Latha and P.V. Datta Prasad: Beyer's non-linearity parameter (*B*/*A*) in benzylidene aniline schiff base liquid crystalline systems, *Physica B* 406: 720-724 (2011).

23. M. V. V. Nagi Reddy, P. Pardhasaradhi, D. Madhavi Latha and V. G. K. M. Pisipati: Phase transitions across different liquid crystalline modifications in compounds with octa decylaniline as one end group - A Dilatometric study, *Phase Transitions* 84 (4): 391-402 (2011).

24. J. Lalitha Kumari, P. V. Datta Prasad, D. Madhavi Latha and V. G. K. M. Pisipati: Orientational order parameter estimated from molecular polarizabilities – An Optical study, *Phase Transitions* 1-13 (2011).

25. J. Lalitha Kumari, P. V. Datta Prasad, M. Ramakrishna Nanchara Rao, D. Madhavi Latha and V.G.K.M. Pisipati: Synthesis, characterization and phase transition studies across different liquid crystalline phases in *n*O.O4 compounds, *Phase Transitions* 84: 639-656 (2011).

26. D. Madhavi Latha, M. V. V. Nagi Reddy, V. G. K. M. Pisipati, P. Pardhasaradhi and P.V. Datta Prasad: Computation of molecular free length (L_f) in TBnA homologues series, *Journal of Molecular Liquids* 159: 142-145 (2011).

27.D. Madhavi Latha, V. G. K. M. Pisipati and P.V. Datta Prasad: Estimation of effective Debye temperature from sound velocity of N-(*p*-*n*-alkoxybenzylidene)-*p*-*n*-alkylanilines, (nO.m) liquid crystalline compounds, *Journal of Molecular Liquids* 161: 91-94 (2011).

28.M.Ramakrishna Nanchara Rao[#], P.V.Datta Prasad, D.Madhavi Latha and V.G.K.M.Pisipati Phase transition studies of n-*(p*-*n*-pentyl/pentyloxy benzylidene)-*p*- *n*- hexadecyl/hexa decyloxy anilines (5.O16, 5O.O16 and 5.16) – Dilatometry: *Solid State Phenomena* (2011).

29. B.R.Rajeswari, P.Pardhasaradhi, M.Ramakrishna Nanachara Rao, P.V.Datta Prasad, D.Madhavi Latha and V.G.K.M.Pisipati; Orientational order parameter, s in *p*-*n*-(phenyl benzylidene)-*p*-alkyloxy anilines and *p*- *n*-(phenyl benzylidene)-*p*-alkyl anilines- An optical study: *Solid State Phenomena* (2011).

30.D.Madhavi Latha, V.G.K.M.Pisipati, M.Ramakrishna Nanachara Rao, P.V.Datta Prasad Experimental investigations on four members of nO.m series - ultrasonic velocity and the behavior of thermodynamic parameter: *Solid State Phenomena* (2011).

31.M.Ramakrishna Nanchara Rao, P.V.Datta Prasad, V.G.K.M.Pisipati and D.MadhaviLatha:Orientational order parameter and molecular polarizability studies in benzylidene anilines: *Solid State Phenomena* (2011).

32. M.V.V.Nagi Reddy, P.V.Datta Prasad, K.Fakruddin, R.Jeevan Kumar, D.Madhavi Latha and V.G.K.M.Pisipati: Synthesis and characterization of schiff's base compounds with octadecylaniline as end group: *Solid State Phenomena* , (2011).

33. B.T. P. Madhav, V. G. K. M.Pisipati, D. Madhavi Latha and P. V. Dattaprasad: Planar Dipole Antenna on Liquid Crystal Polymer Substrate at 2.4 GHz: *Solid State Phenomenon,* (2011).

34. D.Madhavi Latha, V.G.K.M.Pisipati, C. Rama Chandra Prabhu and P.V.Datta Prasad
Estimation of anharmonic parameters, molecular radius, m_r and bayer's non-linearity parameter, b/a in TBnA series: *J. Mol. Liqs,* 164(3),187-190 (2011)

35. B.R.Rajeswari[*], P.Pardhasaradhi[*], M.Ramakrishna Nanachara Rao[*], P.V.Datta Prasad[*], D.Madhavi Latha[#] and V.G.K.M.Pisipati; Phase transition studies in (*p-n*-phenylbenzylidene)-p-alkoxy anilines – Dilatometric study, *Journal of Thermal analysis and Calorimetry*, (2011) in press.(IF: 1.752; published by Springer Link)

36. D. Bhuyan, P. Pardhasaradhi, B. Gogoi, P. V. Datta Prasad, P. R. Alapati & V. G. K. M. Pisipati; Phase Transition Studies of 6.O12O.6 and 7.O6O.7 Using Density Measurement; *Mol. Cryst. Liq. Cryst*. 540, 205-212, 2011

37. Potapragada V. Datta Prasad, G.Padmaja Rani and Venkata G.K.M. Pisipati; Phase transition, birefringence and orientational order parameter studies in four members of benzylidene aniline Liquid crystals; *Solid state Phenomenon*

38. D. Bhuyan, P. Pardhasaradhi, K. N. Singh, D. Madhavi Latha, P. V. Datta Prasad, Parameswara Rao Alapati, V. G. K. M. Pisipati , Study of Molecular Polarizabilities and Orientational Order Parameter in the Nematic Phase of 6.O12O.6 and 7.O12O.7, ***World Journal of Condensed Matter Physics,*** 1, (2011), pp. 167-174**.(**Published **by Scientific publications)**

Chapter in Text book

An overview of liquid crystals based on Schiff's base compound
Shankar B. Rananavare[*] & V.G.K.M. Pisipati[!]
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Publications in Antennas and Liquid Crystal Antennas from 2009-12

International Journals

1) **B.T.P.Madhav**, Prof. VGKM Pisipati, K V L Bhavani, P.Sreekanth, P.Rakesh Kumar, "RECTANGULAR MICROSTRIP PATCH ANTENNA ON LIQUID CRYSTAL POLYMER SUBSTRATE", Journal of Theoretical and Applied Information Technology, www.jatit.org, Vol 18 No 1, August 2010. Cited by 1.

2) **B.T.P.Madhav**, Prof. VGKM Pisipati, M.Ravi Kumar, K V Sundeep, P.Rakesh Kumar, "Circular Patch Antenna at 2.4 GHz on LCP", International Journal of Electronics and Communication Engineering. ISSN 0974-2166 Volume 3, Number 1 (2010), pp. 283-292

3) **B.T.P.Madhav**, Prof. VGKM Pisipati, Prof. Habibulla Khan, VGNS Prasad, Prof. KSN Murty , "ULTRA WIDE BAND LIQUID CRYSTAL POLYMER MICROSTRIP ELLIPTICAL PATCH ANTENNA", Journal of Theoretical and Applied Information Technology, www.jatit.org, Vol 20 No 1, October 2010.

4) P.Poorna Priya, Prof. Habibulla Khan, **B.T.P.Madhav,** K.V.L. Bhavani, "w-shaped microstrip patch antenna at ku-band for satellite communication application", International Journal of Systems and Technologies, IJST : ISSN 0974 – 2107, Vol 3, January 2011

5) K. Fakruddin and R.Jeevan Kumar, V.G.K.M.Pisipati, **B.T.P.Madhav** , D.Madhavi Latha," PHASE TRANSITIONS AND THERMODYNAMIC PARAMETERS OF N-(*p*-*n*-OCTYLOXYBENZYLIDENE)-*p*-*n*-ALKOXYANILINES – A DILATOMETRIC", Molecular Crystals & Liquid Crystals, 524,102-118, 2010, Impact Factor: 0.58. Cited by 5.

6) V.G.K.M.Pisipati*, **B.T.P.Madhav,** D.Madhavi Latha**,** "COMPUTATION OF MOLECULAR FREE LENGTH (Lf) AND MOLECULAR RADIUS (Mr) OF *p*-*n*-ALKOXY BENZOIC ACIDS", Molecular Crystals & Liquid Crystals, 524, 166-175, 2010, Impact Factor: 0.58, Cited by 5.

7) V.G.K.M.Pisipati*, D.Madhavi Latha, **B.T.P.Madhav,** P. V. Datta Prasad, "Estimation of thermodynamic parameters and molecular free length in liquid crystalline N-(*p*-*n*-alkoxybenzylidene)-*p*-*n*-pentyloxy aniline (nO.O5) compounds", Journal of Molecular Liquids Volume 156, Issues 2-3, 30 September 2010, Pages 120-123, *Impact Factor*: 1.497

8) V.G.K.M.Pisipati*, D.Madhavi Latha, **B.T.P.Madhav**, P. V. Datta Prasad , "NEMATIC-SMECTIC-A TRANSION (NSA), LOCATION OF TRICRITICAL POINT (TCP) IN nO.m SERIES – A BIREFRIGNENCE STUDY", Z.Nature forsch, 65a, 335-341(2010), Impact Factor: 0.80. Cited by 1.

9) **B.T.P.Madhav**, Prof. VGKM Pisipati, Prof. Habibulla Khan, VGNS Prasad, Prof. P.V.Datta Prasad, P.Sreekanth, "Microstrip Circular Patch Array Antenna For Wlan Applications On Liquid Crystal Polymer Substrate", Journal of Emerging Trends in Computing and Information Sciences. , Vol. 2, No. 1, February 2011. Cited by 2.

10) **B.T.P.Madhav**, Prof .VGKM Pisipati, Prof.Habibulla Khan, P.Sreekanth, K. Nalini, Prof .P V Dattaprasad, "Liquid Crystal Polymer Dual Frequency Microstrip Square Patch Antenna", International journal of Industrial engineering technology, ISSN 0974-3146 , vol 3, No 1, pp 91-97. Cited by 2.

11) **B.T.P.Madhav**, Prof VGKM Pisipati, N.V.K Ramesh, K.V.Sundeep, Y.Joseph Manoj Reddy, N.Srinivas Sri Chaitanya, N.Krishna Chaitanya, "Ultra Wideband Log-periodic Trapezoidal Antenna on K15 LC-Substrate Material", International Journal of Engineering Science and Technology (IJEST), ISSN : 0975-5462 Vol. 3 No. 5 May 2011, Impact Factor: 2.22

12) Mahesh Kumar Sonti, D.S.Ram kiran, **B.T.P.Madhav** , Prof. Habibulla Khan, K Phani Srinivas, Ch.Bhargav, Murali Krishna Muthe, "Integrated Tracking System For The Generation Of Azimuth And Elevation Errors To Position The Atenna In Line Of Site", International Journal of Computer and Electronics Engineering, ISSN 0975-4202, volume 3, Number 1 , January-June 2011 pp. 21-32

13) Radhika Chinaboina, D.S.Ramkiran, Prof.Habibulla Khan, M.Usha, **B.T.P.Madhav** , K.Phani Srinivas, G.V.Ganesh, " Adaptive Algorithms For Acoustic Echo Cancellation In Speech Processing", International Journal Of Research And Reviews In Applied Sciences, ISSN: 2076-734X, EISSN: 2076-7366 , vol 7, issue 1, April 2011

14) N.V.K.Ramesh, **B.T.P.Madhav** ,D.S.Ramkiran, Prof.Habibulla Khan, G.S.Sarma, T. Vidya sagar, K. Ravi Kumar " Multiband Planar Inverted-F Antenna For PCS And UMTS Applications", International journal of computer and electronics engineering**,** Vol. 2, No. 1, June 2011, pp. 11-16

15) **B.T.P.Madhav,** VGKM Pisipati, K.Sarat Kumar, K.V.L.Bhavani, VGNS Prasad, K.Praveen Kumar, M.Ravi Kumar, **"**Log-periodic Toothed Planar Antenna on LCP for Ultra Wide Band Application", IJAEST", Vol 5, issue 1, pp 62-66, March 2011.

16) **B.T.P.Madhav,** VGKM Pisipati, K. Sarat Kumar, Habibulla khan, D.Rakesh, T.Anusha Ratnam, D.Atulya, P.Sreyash, **"** Comparative Study Of Microstrip Rectangular Patch Array Antenna On Liquid Crystal Polymer And RT-Duroid Substrates", IJECE, ISSN 0974-2166 Volume 4, Number 2 (2011), pp.161-170

17) **B.T.P.Madhav,** Dr. K. Sarat Kumar, Pranob K Charless, P.Sreyash, V.Satyasainadh, P.L.Madhuri, A.Snehitha, Saroj Gautam," Rectangular Microstrip 6X6 Patch Array Antenna Performance Evaluation based on Permittivity of the Substrate Materials", GJCAT, Vol 1 (1), 2011, 83-91, ISSN: 2249-1945. Cited by 2.

18) **B.T.P.Madhav,** Prof.VGKM Pisipati, Dr.K.Sarat Kumar, P.Rakesh Kumar, K.Praveen Kumar, N.V.K.Ramesh, M.Ravi Kumar, " Substrate Permittivity Effects On The Performance Of The Microstrip Elliptical Patch Antenna", Journal of Emerging Trends in Computing and Information Sciences. ISSN2079-8407, vol 2, No 3, pp 122-125, March 2011. Cited by 1.

19) Usha Mallaparapu, K.Nalini, P.Ganesh, T.Raghavndra Vishnu, Habibulla Khan, D.Lakshmi Prasanna, **B.T.P.Madhav,** "Non Blind Adaptive Beam Forming Algorithms For Smart Antenaas", IJRRAS, Vol 6, Issue 4, March 2011.

20) **B.T.P.Madhav**, Prof. VGKM Pisipati, N.V.K Ramesh, Prof. Habibulla Khan, Prof. P.V.Datta Prasad, "PLANAR INVERTED-F ANTENNA ON LIQUID CRYSTAL POLYMER SUBSTRATE FOR PCS, UMTS, WIBRO APPLICATIONS", APPN Journal of Engineering and Applied Sciences, VOL. 6, NO. 4, APRIL 2011 ISSN 1819-6608.

21) Divya Morla, Ravi Sankar chandu, Habibulla Khan, **B.T.P.Madhav,** K.Rama Krishna, G.Sasi Kumari, Mahesh Sonti, "Minimum Bit Error Rate Multiuser Detection For SDMA System", IJRRAS, Vol 7, Issue 1, April 2011.

22) D.Rakesh, P.Rakesh Kumar, **B.T.P.Madhav,** Prof. Habibulla Khan K Ch Sri Kavya, K.Prabhu Kumar, S Bala Durga Prasad, "Systematic evaluation of square patch antenna
performance based on permittivity of the material", IJEST, ISSN 0975-5462, Vol 3, No 3, pp 2374-2382, March 2011.

23) Narendra Neupane,Shankar Acharya,N.Anil Babu, **B.T.P.Madhav** , "Linearly Polarized Microstrip Rectangular Patch Antenna on FR4 substrate for High speed WLAN systems", GJCAT Vol 1 (2), 2011, 137-140.

24) D.Rakesh, P.Rakesh Kumar, **B.T.P.MADHAV,** Prof. Habibulla Khan K Ch Sri Kavya, K.Prabhu Kumar, S Bala Durga Prasad, "Performance Evaluation Of Microstrip Square Patch Antenna On Different Substrate Materials, Journal of

Theoretical and Applied Information Technology, www.jatit.org, Vol 26 No 2, April 2011.

25) K.Prabhu Kumar, Dr.P.S.Brahmanandam, **B.T.P.Madhav** , K Ch Sri Kavya, V.Shiva Kumar, T.RaghavendraVishnu, D.Rakesh, UNIPLANAR QUASI YAGI ANTENNA FOR CHANNEL MEASUREMENTS AT X BAND, Journal of Theoretical and Applied Information Technology, www.jatit.org, Vol 26 No 2, April 2011.

26) **B.T.P.Madhav**, Prof VGKM Pisipati, K.Sarat Kumar, G.Naveen Kumar, D.Atulya, K.Lekha, "Ultra wide band Sinuous Antenna for RADAR Communication Applications", International Journal of Engineering sciences and Research IJESR. ISSN:2230-8520, VOL 2, ISSUE 2, 2011

27) **B.T.P.Madhav**, VGKM Pisipati, P.Rakesh Kumar, K.V.L.Bhavani, S.Balaji, V.Shiva Kumar, "Dual Frequency Microstrip Rectangular Patch Antenna on Liquid Crystal Polymer Substrate", International Journal of Engineering Sciences Research-IJESR http://technicaljournals.org ISSN: 2230-8504; e-ISSN-2230-8512, Vol 01, Issue 02, May, 2011. Cited by 2.

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9) **B.T.P.Madhav**, P.Syam Sundar, M.Sridhar, NVK Ramesh, "Simulation studies of Digital Code Converters Using Simulink", LE-National Journal, ISSN 0972-6055 KARENG/2001/83, Volume 11, N0-4, Dec-2011, PP 283-287.

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International Conferences

1) **B.T.P.Madhav**, Prof. VGKM Pisipati, P.Sreyash, P L Madhuri, " Design of Micro strip Patch Antenna on Liquid Crystal Substrate", NUiCONE-2010, 1st International Conference on Current Trends in Technology.

2) **B.T.P.Madhav,** Prof. VGKM Pisipati, D. Madhavi latha, Prof. P.V. Dattaprasad**,** **"**"Planar Dipole Antenna on Liquid Crystal Polymer Substrate at 2.4 GHz", 2nd International Symposium on **L**iquid **C**rystals: **S**cience and **T**echnology,(LCST2011), CHINA

3) **B.T.P.Madhav**, P. Syam Sundar, K. Sarat Kumar, A.N.V.Kishore, Ankit Kumar Jain, "Liquid Crystal Polymer Dual Band Pan Slot Antenna", Wireless and Optical Communications Networks (WOCN), Aug-22-24. 978-1-4673-1989-8/12/$31.00 ©2012 IEEE. Pp 1-5.

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National Conferences

1) **B.T.P.Madhav**, K V L Bhavani, P.Poorna Priya, K Pranob Charless," Microstrip Elliptical Patch Antenna On Lcp Substrate", NCSCV- 10NATIONAL CONFERENCE ON SIGNAL PROCESSING COMMUNICATIONS& VLSI DESIGN.

2) K V L Bhavani, **B.T.P.Madhav** , P.Poorna Priya, K Pranob Charless," VEHICLE TRACKING SYSTEM USING ARM MICROCONTROLLER BASED ON GPS", NCSCV- 10NATIONAL CONFERENCE ON SIGNAL PROCESSING COMMUNICATIONS& VLSI DESIGN.

3) K Pranob Charless, **B.T.P.Madhav**, K V L Bhavani, P.Poorna Priya, " Au Courant Advent for Denoising and Compression of ECG Signal", NCSCV- 10NATIONAL CONFERENCE ON SIGNAL PROCESSING COMMUNICATIONS& VLSI DESIGN.

4) P.Poorna Priya, K Pranob Charless, **B.T.P.Madhav**, K V L Bhavani, " A Novel Approach For Image Security Using Frequency Domain Digitalwater Marking", NCSCV- 10NATIONAL CONFERENCE ON SIGNAL PROCESSING COMMUNICATIONS& VLSI DESIGN.

5) **B.T.P.Madhav**, Prof VGKM Pisipati, "Planar Inverted F Antenna on Liquid Crystal polymer Substrate", NCACT-2010, National conference at Geetam university.

6) **B.T.P.Madhav**, Prof VGKM Pisipati, "PLANAR DIPOLE ARRAY WITH RADOME AT OPERATING FREQUENCIES 4.5 AND 6 GHZ", NCACT-2010, National conference at Geetam university.

7) K.Ch.Srikavya, D.rakesh Kumar, **B.T.P.Madhav,** "Design of Micro strip Patch Antenna on Liquid Crystal Polymer for Applications at 70GHz", ICON-2010, IETE-Conference, Bangalore.

8) G.V.Narasimha Rao, K.S.N.Murthy, **B.T.P.Madhav** , Habibulla Khan, " Design & Simulation Of Ka-Band Receiver For Airborne Radar", National Level Conference On Electronic Communication Systems, March 16, 2011 Madanapalle Institute Of Technology And Science.

9) **B.T.P.Madhav**, Prof Habibulla Khan, G.Manikanta Reddy, N.S.Krishna Kumar, P.Sreyash, A.Gopala Sharma, "Printed Microstrip Bow-tie Antenna on Liquid Crystal Polymer Substrate for Bluetooth and WLAN Applications", National conference on signal processing and communication systems, April 1st-2nd , 2011, University college of Engineering and Technology, Acharya Nagarjuna University.

10) **B.T.P.Madhav** ,Mahesh Kumar Sonti, D.S.Ram kiran, Prof. Habibulla Khan, K Phani Srinivas, Ch.Bhargav, Murali Krishna Muthe, "Integrated S And X Band Tracking System For The Generation Of Azimuth And Elevation Errors", National conference on signal processing and communication systems, April 1st-2nd , 2011, University college of Engineering and Technology, Acharya Nagarjuna University.

11) **B.T.P.Madhav**, K.Prabhu Kumar, Dr.P.S.Brahmanandam, V.Shiva Kumar, T.R.Vishnu, D.Rakesh, "Uniplanar Quasi Yagi Antenna For Channel Measurements" National conference on signal processing and communication systems, April 1st-2nd , 2011, University college of Engineering and Technology, Acharya Nagarjuna University.

12) **B.T.P.Madhav**, K. Suman Kumar, Kripesh.Ajmera, K.Phani Srinivas, "AN ADVANCED MAC PROTOCOL FOR DISTRIBUTED MIMO WLANS", 1st National conference on next generation computing and information security (NCNGCIS), March 25th-26th 2011, Institute of Management studies, Noida.

13) **B.T.P.Madhav,** Prof. VGKM Pisipati, Prof. P.V. Dattaprasad, "Shorting Plate Planar Inverted Folded Antenna on Liquid Crystal Substrate Material", 18th National Conference on Liquid Crystals, NERIST, Itanagar, Arunachal Pradesh, INDIA during 15-17 November, 20 11.

14) Venkata Kishore.K, Surendra Babu.B, K V V Kumar, K. Nalini, **B.T.P.Madhav**, "RF Signal Distribution subsystem for wind profiler", National Conference on Role of Radars in Atmospheric and Ionospheric Studies RAISE-12, ISBN:978-14276-5344-4, K L University during 4th and 5th January 2012, pp 64-67.

15) N.Anusha, D.S.Ramkiran, **B.T.P.Madhav**, Shaik Saira Fathima, Kowshik, "Double Talk Echo Cancellation in Satellite Telephone Communication Using Adaptive Alogorithms", National Conference on Role of Radars in Atmospheric and Ionospheric Studies RAISE-12, ISBN: 978-14276-5344-4, K L University during 4th and 5th January 2012, pp 126-129.

16) P.Syam Sundar, **B.T.P.Madhav**, M.Sridhar, N.V.K.Ramesh, K.sarath Kumar, Habibulla Khan, "Design and Analysis of Antenna for Direct Broadcast Sysem in the Satellite Communication", National Conference on Role of Radars in Atmospheric and Ionospheric Studies RAISE-12, ISBN: 978-14276-5344-4, K L University during 4th and 5th January 2012, pp 147-149.

17) N.V.K.Ramesh, N. Venkatram, **B.T.P.Madhav**, P.Syam Sundar, Sarath Kumar, "Design of Microstrip Bowtie Antenna for Cellula Video Application in Satellite Communication", National Conference on Role of Radars in Atmospheric and Ionospheric Studies RAISE-12, ISBN: 978-14276-5344-4, K L University during 4th and 5th January 2012, pp 150-154.

18) M.Shaleem raj, D.Ujwala, K. Venkata ravi Teja, **B.T.P.Madhav**, P.S.Brahmanandam, L.Yogesh, "Planar Inverted Folded Antenna for Mobile and Wireless Communication", National Conference on Role of Radars in Atmospheric and Ionospheric Studies RAISE-12, ISBN: 978-14276-5344-4, K L University during 4th and 5th January 2012, pp 241-243.

Total Number of Publications in LCRC-R&D = 145

7.0 List of B.Tech Projects Conducted in the Lab

List of B.Tech Projects conducted in the Lab(LCRC)				
S.N0.	Title of Project	Student Name & Roll No.	Year of Project	Faculty Supervisor
1	Blind Bandwidth Estimation of the communication signal	B.V.S.A.Pavan Kumar(Y6EC318) B.V.Naik(L7EC340) J.Lavanya Ambica(Y6EC244)	2009-10	B.T.P.Madhav
2	Microstrip Planar Dipole Array Antenna	Ch.Pushpalatha(Y7EC265) G.Naveen Kumar(Y7EC251 J.Victor Paul(Y7EC329)	2010-11	B.T.P.Madhav
3	Performance Evaluaton of Rectangular Microstrip Patch Array Antenna for Different Dielectic constants	A.Snehitha(Y7EC300) P.Sreyesh(Y7EC306) V.Satya sainath(Y7EC296) Saroj Gautham(Y7EC294)	2010-11	B.T.P.Madhav
4	Performance Evaluaton of Array Antenna by changing the dimentional Characterisation	K.Guru Pavani(Y8EC260) M.Ravindra(Y8EC278) N.Revanth Teja(Y8EC288)	2011-12	B.T.P.Madhav
5	Reduction of Harmonics and Surface wave Losses in Serrated MSPA Using 2D-EBG Structures	Atejaswini, Kharahari, Bhaskar Teja, Krishna Chaitanya	2012-13	B.T.P.Madhav
6	Compact Sierpinski Carpet Antenna on Destructive Ground Plane	G. Vaishnavi, V. Manichandana, Ch Harinath Reddy, S. Ravi Teja	2012-13	B.T.P.Madhav

8.0 List of M.Tech Projects Conducted in the Lab

List of M.Tech Projects conducted in the Lab(LCRC)				
S.N0.	Title of Project	Student Name & Roll No	Year of Project	Faculty Supervisor
1	Design and Development of Broadband Balanced Antipodal Antenna for Phased Array Applications	Y.L.Swetha(09102122	2010-11	B.T.P.Madhav
2	Compact Planar Inverted-F Antenna for Bluetooth and Wi MAX Application	Manoj Kumar(10102176)	2011-12	B.T.P.Madhav
3	Fractal Shaped Sierpinski on EBG Structured Ground Plane	Dhatri	2013-13	B.T.P.Madhav
4	Ultra Wide Band Notched printed Compact Antenna	K.Naresh babu	2012-13	B.T.P.Madhav

9.0 List of PhD Projects Conducted in the Lab:

S.No	Title of Project	Scholar name	Year of Project	Faculty/Supervisor
1	Thermal and optical properties of some 7O.Om liquid crystalline compounds	Miss D.Madhavi Latha	Ph.D. Thesis submitted in July 2012.	Dr.VGKM Pisipati
2	Substrate permittivity effects on the performance of compact and broad band antennas	Mr. B. T. P. Madhav	Pre-Ph.D. Completed in Nov. 2012	Dr. Habibullah Khan and Dr.VGKM Pisipati

10. 0 List of Working Models in Existence in the Center

S.No.	Title of the model	Cost of the development of the model	Specification and working of the model
1.	Liquid Crystal rectangular patch antenna	Rs. 5,000/-	Testing at RCI, Hyderabad.
2.	Liquid Crystal circular patch antenna	Rs. 5,000/-	Testing at RCI, Hyderabad.
3	T-Slotted Microstrip Patch Antenna	Rs 3,000/-	M.Tech Project Batch-2012-13
4	Serrated Fractal Antenna	Rs 5, 000/-	B.Tech Project Batch-2012-13
5	Slotted Aperture Antenna	Rs 5,000/-	B.Tech Project Batch

11.0 Budget details for the last 4 Years The following amounts are received from

1. The management KL University ---- Rs. 22,00,000/-
2. Department of science and technology, New Delhi --- Rs. 26,00,000/-
3. DST WOS, New Delhi --- Rs. 11,00,000/-

Total amount has been spent in purchasing the equipment (50, 00,000/-) and chemicals (8, 00,000/-), Stationary etc.

12.0 Research Collaborations with Outside World

1) RCI Hyderabad, EMI/EMC wing regarding Antennas Testing
2) SD Polymers, Machilipattanam regarding Liquid Crystal Compounds preparation.
3) Atlantic Circits, Hyderabad for Fabrication of Antennas.