

## CURRICULAM VITAE

**Dr.M.RAJA, M.Sc, Ph.D, PDF (NTU, Taiwan)**



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### ***Current Position:***

Assistant Professor and Head,  
Department of Physics,  
Rajapalayam Rajus' College, Rajapalayam,  
Virudhunagar District, Pin-626117, Tamilnadu, India.

### ***Education:***

| Name of Degree | Subject/Branch        | Year      | Rank/Class                       | University                         |
|----------------|-----------------------|-----------|----------------------------------|------------------------------------|
| PDF            | Spintronics/Thinfilms | 2009-2010 | Indo-Taiwan Merit Fellowship     | National Taiwan University, Taiwan |
| Ph.D           | Physics               | 2003-2008 | Highly Commended                 | Alagappa University, India         |
| M.Sc           | Physics               | 2000-2002 | Gold Medal/I <sup>st</sup> Class | Alagappa University, India         |
| B.Sc           | Physics               | 1997-2000 | First Class                      | Madurai Kamaraj University, India  |

## ***Research Guidance:***

**Ph.D ongoing : 03**

**Ph.D Completed : 02**

**M.Phil completed : 09**

**M.Sc completed : 17**

**B.Tech completed : 05**

## ***Research Experience:***

- Total no of years: **22 years**
- 2015-till now , Rajapalayam Rajus' College,  
Rajapalayam, Virudhunagar District, Pin-626117, Tamilnadu, India.
- 2010-2015 –, Dept of Physics, Kalasalingam University, Krishnankovil, India.
- 2009-2010: **Postdoctoral Fellow**, Dept of Physics, NTU, Taiwan.
- 2003-2008: **Research Scholar**, Thinfilm Lab, Dept of Physics, Alagappa University, Karaikudi-3, India.
- 2005-2006: **AURF Fellow**, Dept of Physics, Alagappa University, India.
- 2002-2003: **Project Assistant**, Dept of Physics, Alagappa University, India.
- 2001-2002: **Project Student**, Melt Growth Lab, Crystal Research Centre, Dept of Physics, Alagappa University, India.

## ***Teaching Experience:***

- Total no of years: **18 years**
- 2015-till now –**Assistant Professor**, Rajapalayam Rajus' College,  
Rajapalayam, Virudhunagar District, Pin-626117, Tamilnadu, India.
- 2010-2015 : **Assistant Professor**, Department of Physics, Kalasalingam University, Krishnankoil- 626126, India.
- 2008-2009 : **Assistant Professor**, Department of Physics, R.V.S College of Engineering, Dindigul, Tamilnadu, India.
- 2006-2007 : **Guest Faculty** for P.G students, Dept of Physics, Alagappa University, India.

- 2004-2005 : **Guest Faculty** for P.G students, Dept of Physics, Alagappa University, India

### ***Awards and Fellowships:***

- **Gold medal** in MSc (Physics) for standing 1<sup>st</sup> rank in Alagappa University (2002).
- **Postdoctoral Fellowship**, Centre for Nano Storage and Spintronics, Dept of Physics, NTU, Taiwan (2009-2010).
- **Alagappa University Research Fellowship (AURF)** in the year 2005 -2006.
- **P.M.T & V.O.C Merit Scholarship** in M.Sc Physics for excellence in the year (2001-2002).

### **Research Profile:**

1. **Google Scholar: Citations-794, h-index-14, i10- index-15**
2. **Scopus: Citations-415, h-index-11**
3. **Web of Science: Citations-455, h-index-11**
4. **Research Gate: R.G. score-23.02, Citations-575**

### ***Conference/FDP Organized:***

#### **International :03**

Title : International conference on Advanced Materials and its Applications (ICAMA)-2012 (Active Member)

#### **National:03**

1. National Conference on “Technological Important Crystalline and Amorphous Solids” (TICAS-2014), (Active Member)
2. National Conference on “Technological Important Crystalline and Amorphous Solids” (TICAS-2013), (Active Member)
3. National Conference on “Technological Important Crystalline and Amorphous

Solids” (TICAS-2012), (Active Member)

**No of Webinars/Guest lecture Organised: 20**

**No of International/National FDP Organised: 4**

***Research Interests:***

- Thin Film Technology (Magnetic Materials (Multi-layer, GMR, TMR)  
Semiconductors and Solar Cells)
- Nano Science and Technology
- Crystal Growth
- Spintronics (Magnetic-Semiconductor-Organic-Spintronics)
- Composite Materials (MMC, PMC and CMC)
- Polymer Technology

***Technical Expertise:***

➤ **Characterization Techniques:**

X-Ray Diffraction (XRD)  
Transmission Electron Microscopy (TEM)  
Scanning Electron Microscopy (SEM)  
Atomic Force Microscopy (AFM)  
Energy Dispersive Analysis of X-Rays (EDAX)  
X-Ray Photo Electron Spectroscopy (XPS)  
Vibrating Sample Magnetometer (VSM)  
UV-VIS-near IR (Transmission and Absorption)  
Electrochemical (CV, LSV)  
Photoelectrochemical Solar Cell studies.

➤ **Thin Film Fabrication:**

Multi-Gun-Sputtering  
Vacuum coating

Electrodeposition

Electroless deposition

Spray pyrolysis

Coating

SILAR method

➤ **Crystal Fabrication:**

Czochralski Crystal pulling Technique

Bridgman Technique

Solution Growth

Sankaranarayanan-Ramasamy Method.

➤ **Nano particle Fabrication:**

Hydro thermal growth

Wet chemical growth

Solid State Reaction Method.

**Publications:**

***International Journals:***

| S. NO | Authors                                                                                       | TOPIC                                         | JOURNAL NAME                                                         | VOLUME AND PAGE NO. | YEAR |
|-------|-----------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------------------------------|---------------------|------|
| 1.    | T. Mahalingam, V.S. John, <b>M. Raja</b> , <b>Y.K. Su</b> and <b>P.J.Sebastian</b>            | <i>Solar Energy Materials and Solar Cells</i> | Electrodeposition and Characterization of transparent ZnO thin films | 2005, 88, 227       | 2005 |
| 2.    | R. Chandramohan, A. Kathalingam, K. Kumar, <b>M. Raja</b> , D. Kalyanaraman and T.Mahalingam, | <i>Proc.INCO SURF</i>                         | Studies on Nitrogen Ion Implanted CdSe Semiconductor Thin Films      | 2004, 359.          |      |

|     |                                                                                                                                  |                                                      |                                                                                                |                                                    |      |
|-----|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------|------|
| 3.  | R.Chandramohan,<br>L.-S. Hsu,<br>S.Thanikaikarasan,<br>M.Raja, K.Kumar, T.<br>Mahalingam.                                        | <i>Proc.Materials and Nanostructures</i>             | Growth of ZnCdSe Semiconductor thin films for opto- electronic applications..                  | 2006,6029,145                                      | 2005 |
| 4.  | Mahalingam, S.<br>Thanikaikarasan, M.<br>Raja, C.Sanjeeviraja,<br>Soonil Lee, Yong Deak<br>Kim, Hosun Moon and<br>P.J.Sebastian. | <i>J. New Materials for Electrochemical Systems.</i> | T Studies on electrochemically grown Cd-Fe-Se thin films.                                      | 2007, 10, 33.                                      | 2007 |
| 5.  | Mahalingam, M.Raja, S.<br>Thanikaikarasan, C.<br>Sanjeeviraja, S.Velumani,<br>H. Moon and Y. D. Kim,                             | Materials Characterization                           | T.<br>Electrochemical deposition and characterization of Ni-P alloy thin films.                | 2007, 58, 800.                                     | 2007 |
| 6.  | halingam, S. Velumani,<br>M. Raja, S.<br>Thanikaikarasan, J.P. Chu,<br>S.F. Wang<br>and Y.D. Kim.                                | Materials Characterization                           | T.<br>Electrosynthesis and characterization of lead oxide thin films.                          | 2007, 58, 817.                                     | 2007 |
| 7.  | . T.Mahalingam, S.<br>Thanikaikarasan, R.<br>Chandramohan, M. Raja,<br>C.Sanjeeviraja,<br>J-Ho Kim and Yong Deak<br>Kim.         | <i>Materials Chemistry and Physics,</i>              | T<br>Effects of bath temperature in electrodeposited FeSe <sub>2</sub> thin films,             | 2007 106, 369.                                     | 2007 |
| 8.  | Kyung Seek Lew, M.<br>Raja, S.Thanikaikarasan,<br>Taekyu Kim, Yong Deak<br>Kim<br>and T. Mahalingam                              | Materials chemistry and Physics                      | Effect of pH and current density in electrodeposited Co-Ni-P alloy thin films <i>Materials</i> | 2008,112, 249.                                     | 2008 |
| 9.  | S.Thanikaikarasan,<br>T.Mahalingam, M.Raja,<br>Taekyu Kim, Yong Deak<br>Kim.                                                     | <i>J.Materials Science: Materials in Electronics</i> | Characterization of electroplated FeSe thin films ..                                           | 2008, DOI 10.1007/s 10854-008-9794-y, 20 (727-734) | 2009 |
| 10. | John H. Kim, M. Raja, S.<br>T hanikaikarasan, Yong<br>Deak Kim, S.R. Srikumar<br>and T. Mahalingam                               | <i>Applied Surface Science</i>                       | Effect of NaCl concentration in electrodeposited Co-P alloy thin films                         | 2009,255 6540-6544.                                | 2009 |
| 11. | T. Mahalingam, K.                                                                                                                | <i>Advanced</i>                                      | Effect of pH on composition, structure and                                                     | 2009, 68, 52-59.                                   | 2009 |

|     |                                                                                          |                                                                |                                                                                                                                                                |                              |      |
|-----|------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------|
|     | Sundaram, S.Velumani, <b>M.Raja</b> , S. Thanikaikarasan, Yong Deak Kim and Rene Asomoza | <i>Materials Research</i>                                      | magnetic properties of electrodeposited Co-Ni alloys                                                                                                           |                              |      |
| 12. | 5. T. Mahalingam, S. Thanikaikarasan, K. Sundaram, <b>M. Raja</b> and Jin-Koo Rhee       | <i>Journal of New Materials for Electrochemical systems</i>    | Electrochemical Deposition and Characterization of Lead Telluride Thin Films                                                                                   | 2010,13 (35-39)              | 2010 |
| 13. | <b>M. Raja</b> , K. Sundaram, V. Dhanasekaran, Soonil Lee, Han-jo Lim, T. Mahalingam     | <i>AIP Conf. Proc.</i>                                         | Structural and Magnetic Properties of Electrodeposited Co-Ni-P Alloy Thin Films                                                                                | 2011, 1349, 763-764.         | 2011 |
| 14. | K.Sundaram, <b>M.Raja</b> , S.Thanikaikarasan, J.P.Chu, T.Mahalingam                     | Materials Science-Poland                                       | Role of pH and current density in electrodeposited soft magnetic CoNi-Fe alloy thin films                                                                      | 29 (2011) 165-170.           | 2011 |
| 15. | K. Sundaram, V. Dhanasekaran, T. Mahalingam, <b>M. Raja</b> , Takeyu Kim, Yong Deak Kim  | <i>AIP Conf. Proc.</i>                                         | Current Density Effects on the Structural and Magnetic Properties of CoNiFe AlloyThin Films                                                                    | 2011,1349, 781-782           | 2011 |
| 16. | S.Thanikaikarasan, M.Raja, Soonil Lee and T.Mahalingam                                   | Material Science in Semiconductor Processing                   | Electrochemical growth and characterization of iron doped cadmium sulfide thin films                                                                           | 37 (215-222)                 | 2015 |
| 17. | V. Siva, S. Suresh Kumar, M. Suresh, <b>M. Raja</b> , S. Athimoolam, S. Asath Bahadur.   | Journal of Molecular Structure                                 | N-H...O hydrogen bonded novel nonlinear optical semiorganic crystal (4-methoxyanilinium trifluoroacetate) studied through theoretical and experimental methods | 1133 (2017) 163–171          | 2017 |
| 18. | A. Shameem, P. Devendran, V. Siva, <b>M. Raja</b> , A. Manikandan, S. Asath Bahadur      | Journal of Inorganic and Organometallic Polymers and Materials | Preparation and Characterization of Nanostructured CdO thin films by SILAR method for Photocatalytic Application                                               | 27 (3) (2017), 692–699.      | 2017 |
| 19. | V. Siva, A. Shameem, S. Suresh Kumar, <b>M. Raja</b> , S. Athimoolam, S. Asath Bahadur.  | Journal of Material Science: Materials in                      | Structural, spectral, Quantum chemical and thermal studies on a new NLO crystal: Guanidinium Cinnamate                                                         | 28(17), (2017), 12484–12496. | 2017 |

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|-----|----------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------|
|     |                                                                                                          | Electronics              |                                                                                                                                                                                                         |                   |      |
| 20. | Siva Vadivel, Asath Bahadur Sultan, Shameem Abdul Samad, Athimoolam Shunmuganarayanan, <b>Raja Muthu</b> | Chemical Physics Letters | Synthesis, structural elucidation, thermal, mechanical, linear and nonlinear optical properties of hydrogen bonded organic single crystal guanidinium propionate for optoelectronic device application. | 2018;707:165–171. | 2018 |

### ***Invited Talks:***

- **“Spintronics”**- Dept of Physics, Sri Sevugan Annamalai College, Devakottai- 630 003. Sep-14, 2011.
- **“Magnetic Thinfilms for Memory Devices”**- SFR college of arts and science, Sivakasi. Aug-20, 2011.
- **“Global Warming and Climate Change”** – NSS Camp, Rajapalayam  
Rajus’ College, Nagercoil, Sep-20, 2019.

***Total number of International and national level Workshop/  
FDP/Webinars/Conferences Participation: 241***

### ***International Conferences:***

1. **M.Raja**, K. Sundaram, V. Dhanasekaran, Soonil Lee, Han-jo Lim, T. Mahalingam “Structural and Magnetic Properties of Electrodeposited Co-Ni-P Alloy Thin Films” DAE - Solid State Symposium – December 2010.
2. K. Sundaram, V. Dhanasekaran, **M.Raja**, R. Chandramohan, S.R. Srikumar T. Mahalingam “Characterization of electrodeposited Co-Ni-Fe alloy thin films for memory device” Advanced Materials and its applications (ICAMA-2011) 820-827 ISBN: CORP-000187, Macmillan Advanced Research series.

3. K. Sundaram, V. Dhanasekaran, T. Mahalingam, **M.Raja**, Takeyu Kim, Yong Deak Kim “Current Density Effects on the Structural and Magnetic Properties of CoNiFe Alloy Thin Films” DAE - Solid State Symposium – December 2010.
4. T.Mahalingam, **M.Raja**, S.Thanikaikarasan, C.Sanjeeviraja, Hosun Moon, Yong Deak Kim and S.Velumani. “Electrochemical deposition and characterization of Ni-P alloy thin films”; Symposium 7, Materials Characterization, P.117, IMRC-2005, ISBN 968 863 8161, Cancún, México.
5. T.Mahalingam, S.Velumani, **M. Raja**, S.Thanikaikarasan, J.P.Chu, S.F.Wang and Yong Deak Kim, “Electrosynthesis and characterization of lead oxide thinfilms”, Symposium 7, Materials Characterization, p.126, IMRC-2005, ISBN 968 863 8161, Cancún, México.
6. T.Mahalingam, **M.Raja**, Homero Castaneda, P.J. Sebastian and S.Velumani, “Preparation and Characterization of CdFeSe Thin Films” XIII International Materials Research Congress, Symp 2, Solar Hydrogen Fuel cells, p 40, Aug.22-26, 2004, ISBN 968 863 7572, Cancun, Mexico.
7. S.Velumani, **M.Raja**, S.Thanikaikarasan, Homero Castaneda, P.J.Sebastian PP and T.Mahalingam, “Electrocrystallization and Studies on of Ferrous Selenide thin films” XIII International Materials Research Congress, Symp 2, Solar Hydrogen Fuel cells, p 42, Aug.22-26, 2004, ISBN 968 863 7572, Cancun, Mexico.
8. S.Velumani, **M.Raja**, J.A.Chavez, Homero Castaneda and T.Mahalingam, “Preparation and Characterization of CoMn alloy thin films”, XIII International Materials Research Congress, Symp 5, p 13, Magnetic Materials, ISBN 968 863 7572, Aug.22-26, 2004, Cancún, México.
9. T.Mahalingam, **M.Raja**, A.Thanikaikarasan, J.A.Chavez, Homero Castaneda and S.Velumani, “The effect of NaCl concentration on the properties of CoP thin alloy films”, XIII International Materials Research Congress, Symp 5, p.14, Magnetic Materials, Aug.22-26, 2004, ISBN 968 863 7572, Cancun, Mexico.
10. S.Velumani, **M.Raja**, J.A.Chavez, Homero Castaneda and T.Mahalingam, “Synthesis and Characterization of NiFe alloy thin films”, XIII International Materials Research Congress, Symp 7, p.14, Materials Characterization, Aug.22-26, 2004, ISBN 968 863 7572, Cancun, Mexico.
11. S.Velumani, **M.Raja**, J.A.Chavez, Homero Castaneda and T.Mahalingam, “The influence of pH on Galvanostatically deposited CoNi alloy thin films”, XIII International Materials Research Congress, Symp 5, p.15, Magnetic Materials, Aug.22-26, 2004, ISBN968 863 7572, Cancun, Mexico.
12. S.Velumani, **M.Raja**, J.A.Chavez,, Homero Castaneda and T.Mahalingam,

- “Investigations on Ni-P alloy thin films prepared by electro deposition”, XIII International Materials Research Congress, Symp 5, p.15, Magnetic Materials, Aug.22-26, 2004, ISBN 968 863 7572, Cancun, Mexico.
13. T.Mahalingam, **M.Raja**, **J.A.Chavez**, **Homero Castaneda** and S.”Velumani, “Electrosynthesis and characterization of lead oxide thin films”, XIII International Materials Research Congress, Symp 5, p. 17, Magnetic Materials, Aug.22-26, 2004, ISBN 968 863 7572, Cancun, Mexico.
  14. T.Mahalingam, V.Dhanasekaran, **M.Raja**, S.R.Srikumar, G.Ravi and R.Chandramohan. “Preparation and Characterization of Double dip coated CdS Thinfilms” NCAFMA-2011,PP71.
  15. V.Dhanasekaran, K.Sundaram, **M.Raja**, S.R.Srikumar and T.Mahalingam. “Synthesis and Characterization of Electrodeposited ZnTe thinfilms” NCAFMA-2011,PP-72.
  16. V. Siva, S. Asath Bahadur, A. Shameem, D. Vanitha, S. Athimoolam, **M. Raja**. Growth, optical, dielectric and mechanical properties of organic single crystal: 4-methoxyanilinium trifluoroacetate, Proceedings of the National conference on Recent Trends in Functional materials (2017), ISBN: 978-93-87526-07-5.
  17. V. Siva, A. Shameem, A. Murugan, S. Athimoolam, **M. Raja**, S. Asath Bahadur., Theoretical investigations on molecular structure, HOMO-LUMO and population analysis of Guanidinium Propionate for Nonlinear Optical Applications, Proceedings of the National seminar on Technologically Important crystalline and Amorphous solids (2018),ISBN: 978-81-909237-3-6.

### ***National Conferences:***

| S. NO. | NAME OF THE EVENT                                                                                  | ORGANISED BY                                             | DATE         | YEAR |
|--------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------|------|
| 1.     | Awareness workshop on “THE FACILITIES OF UGC-DAE CONSORTIUM FOR SCIENTIFIC RESEARCH”               | Department of Physics, Pondicherry University            | Nov 04 & 05  | 2004 |
| 2.     | National workshop on “THIN FILM PREPARATION AND CHARACTERISATION TECHNIQUES FOR ENERGY CONVERSION” | Alagappa University, Karaikudi.                          | Nov 22 to 26 | 2004 |
| 3.     | National conference on “APPLICATION ORIENTED NANOMATERIALS “                                       | Department of Industrial chemistry, Alagappa University. | Mar 10 &11   | 2005 |
| 4.     | National workshop on “NANOMATERIALS – SYNTHESIS, CHARACTERIZATION AND APPLICATION”                 | Department of Industrial chemistry, Alagappa University. | Dec 14 &15   | 2006 |
| 5.     | National level workshop on “TECHNOLOGY OPTIONS FOR A GREENER ENVIRONMENT”                          | Mount zion college of Engineering and technology,        | Mar 08 &09   | 2007 |

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| 6.  | RECENT ADVANCES IN METAL-ORGANIC CHEMISTRY AND MATERIALS SCIENCE                       | Department of chemistry, PSG College of Technology, Coimbatore. | Jul 05 & 07     | 2007 |
| 7.  | Workshop on "LUMINESCENCE AND ITS APPLICATION"                                         | Department of Physics, Kalasalingam University                  | Feb 12          | 2010 |
| 8.  | DAE-SOLID STATE PHYSICS SYMPOSIUM                                                      | Department of Physics, Kalasalingam University                  | Dec 26 to 30    | 2010 |
| 9.  | RECENT ADVANCES IN MATERIALS SYNTHESIS AND CHARACTERIZATION-2011                       | Department of Physics, SreeSevuganAnnamalai college, Devkottai. | Nov 01          | 2011 |
| 10. | National Conference on "ADVANCED FUNCTIONAL MATERIALS AND APPLICATIONS"                | Department of chemistry, Kalasalingam University                | Dec 16 & 17     | 2011 |
| 11. | National Seminar on "TECHNOLOGICALLY IMPORTANT CRYSTALLINE AND AMORPHOUS SOLIDS-2012"  | Department of Physics, Kalasalingam University                  | Mar 2 & 3       | 2012 |
| 12. | National Seminar on "TECHNOLOGICALLY IMPORTANT CRYSTALLINE AND AMORPHOUS SOLIDS-2012"  | Department of Physics, Kalasalingam University                  | Mar 1 & 2       | 2013 |
| 13. | "SECOND NATIONAL CONFERENCE ON ADVANCED FUNCTIONAL MATERIALS AND APPLICATIONS"         | Department of chemistry, Kalasalingam University                | Mar 22 & 23     | 2013 |
| 14. | National Seminar on "ENGINEERING MEGA-SCIENCE PROJECTS WITH EMPHASIS ON INO"           | Kalasalingam University                                         | Apr 03          | 2013 |
| 15. | Third National Seminar on "TECHNOLOGICALLY IMPORTANT CRYSTALLINE AND AMORPHOUS SOLIDS" | Department of Physics, Kalasalingam University                  | Feb 28 to Mar 1 | 2014 |
| 16. | "THIRD NATIONAL CONFERENCE ON ADVANCED FUNCTIONAL MATERIALS AND APPLICATIONS"          | Department of chemistry, Kalasalingam University                | Mar 21 & 22     | 2014 |
| 17. | Workshop on "Physics in Engineering"                                                   | Department of Physics, Thiagarajar College of Engineering       | Nov 5 & 6       | 2015 |
| 18. | Fifth National Conference on "ADVANCED FUNCTIONAL MATERIAL AND APPLICATIONS"           | Department of chemistry, Kalasalingam University                | Mar 30 & 31     | 2017 |

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|-----|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------|------|
| 19. | GROWTH, OPTICAL, DIELECTRIC AND MECHANICAL PROPERTIES OF ORGANIC SINGLE CRYSTAL 4-METHOXYANILINIUM TRIFLUOROACETATE                             | B.S.Abdurrahman crescent Institute of science and Technology, Chennai | Dec 5 & 6   | 2017 |
| 20. | THEORETICAL INVESTIGATIONS ON MOLECULAR STRUCTURE, HOMO-LUMO AND POPULATION ANALYSIS OF GUANIDIUM PROPIONATE FOR NONLINEAR OPTICAL APPLICATIONS | Department of Physics, Kalasalingam University                        | Mar 2 & 3   | 2018 |
| 21. | Fifth National Conference on "TECHNOLOGICALLY CRYSTALLINE AND AMORPHOUS SOLIDS-2019"                                                            | Department of Physics, Kalasalingam University                        | April 5 & 6 | 2019 |

### ***ComputerSkills:***

M.S. Office, FoxPro, Language-C, Windows, Internet and scientific software's.