

PROFILE

Dr. A. Amudhavalli, M.Sc., M.Phil., Ph.D
D. No: 12B, First Floor, Muniyandi koil lane,
Manjanakara Street, Madurai-1, Tamilnadu, India.
E-mail: amudha.subha8@gmail.com
Mobile: +91-97888 70375

PERSONAL PROFILE:

Name : Dr. A.AMUDHAVALLI

Father's name : A.Arunachalam

Educational Qualification : M.Sc., M.Phil., Ph.D

Gender : Female

Date of Birth : 08.07.1992

Religion : Hindu

Community : Backward Class

Marital Status : Single

Nationality : Indian

Languages known : Tamil, English.

Residing address : D.No: 12B, First Floor,
Muniyandi Kovil Lane,
Manjanakara Street, Madurai -625001.
Tamilnadu, India.



ACADEMIC BACKGROUND

Course	Name of the Institution	Board of Study	Year	Percentage of marks
Ph.D., Physics	N.M.S.S.V.N. College (Autonomous), Madurai	Madurai Kamaraj University	2015-2020	Awarded
M. Phil., Physics	N.M.S.S.V.N. College (Autonomous), Madurai	Madurai Kamaraj University	2014-2015	82.2
M.Sc., Physics	N.M.S.S.V.N. College (Autonomous), Madurai	Madurai Kamaraj University	2012-2014	72.4
B.Sc., Physics	Fatima College (Autonomous), Madurai	Madurai Kamaraj University	2009-2012	75.3

TEACHING EXPERIENCE : 1 year 3 months

S. No	Name of the Institution	Duration
1.	Nadar Mahajana Sangam S. Vellaichamy Nadar College, Nagamalai.	4 months
2.	Jayaraj Annapackiam College for Women, Periyakulam	11 months

RESEARCH EXPERIENCE : 7 Years

CSIR Senior Research Fellow at P.G & Research Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu, during May 2018 to December 2021.

FELLOWSHIPS AND AWARDS

➤ **Senior Research Fellowship from Council of Scientific and Industrial Research, India.**

M.Sc PROJECT TITLE

SYNTHESIS AND CHARACTERIZATION OF SILVER NANO-PARTICLES

M.Phil PROJECTE TITLE

INVESTIGATION OF STRUCTURAL, ELECTRONIC AND OPTICAL PROPERTIES OF GALLIUM ARSENIDE AND INDIUM ARSENIDE

Ph.D THESIS TITLE

FIRST PRINCIPLES STUDY OF ELECTRONIC STRUCTURE, MAGNETIC AND OPTICAL PROPERTIES OF SOME HEUSLER ALLOYS.

RESEARCH PAPERS PUBLISHED

INTERNATIONAL JOURNAL : 27

TECHNICAL SKILLS and KNOWN SOFTWARES

1. TB-LMTO
2. VASP

3. Wien2k
4. Phonopy
5. Crystal diffraction
6. Crystal Maker
7. Vesta
8. SigmaPlot
9. Origin 08 and 09
10. Virtual Nanolab
11. Operating Systems- Windows XP, Windows (Windows 7, 8, 10), Linux (Cent OS)
12. Microsoft Office Word, Excel, PowerPoint, Publisher.
13. Adobe Photoshop, Corel Draw

RESEARCH INTEREST

- Condensed Matter Physics
- Computational Physics
- Density Functional Theory
- First Principles Calculations
- Structural Stability
- Phase Transition
- Electronic Structure
- Mechanical Properties
- Magnetic and Optical Properties

PAPERS PUBLISHED IN INTERNATIONAL JOURNALS

1. Structural stability, electronic structure and mechanical properties of alkali gallium hydrides $AGaH_4$ ($A = Li, Na$), M. Santhosh, R. Rajeswarapalanichamy, M. Manikandan, A. Murugan, **A. Amudhavalli** and K. Iyakutti, AIP Conf. Proc. 1728 (2016) 020309.

2. Structural phase transition, electronic structure and optical properties of half Heusler alloys LiBeZ (Z = As, Sb), **A. Amudhavalli** and R. Rajeswarapalanichamy, AIP Conf. Proc. 1731 (2016) 030017.
3. Structural, Electronic and Mechanical Properties of CoN and NiN: An Ab Initio Study, **A. Amudhavalli**, M. Manikandan, A. Jemmy Cinthia, R. Rajeswarapalanichamy and K. Iyakutti, Zeitschrift fur Naturforschung A, A Journal of Physical Sciences, 72 (2017) 321.
4. First principles study of structural and magnetic properties of transition metal nitrides TMN (TM = Cr, Mn), R. Rajeswarapalanichamy, **A. Amudhavalli**, M. Manikandan, M. Kavitha and K. Iyakutti, Phase Transitions 90 (2017) 894.
5. Structural, electronic, mechanical and magnetic properties of Mn based ferromagnetic half Heusler alloys: A first principles study, **A. Amudhavalli**, R. Rajeswarapalanichamy, K. Iyakutti, Journal of Alloys and Compounds 708 (2017) 1216.
6. First principles study on Fe based ferromagnetic quaternary Heusler alloys, **A. Amudhavalli**, R. Rajeswarapalanichamy, K. Iyakutti, Journal of Magnetism and Magnetic Materials 441 (2017) 21.
7. First principles study of structural and optoelectronic properties of Li based half Heusler alloys, **A. Amudhavalli**, R. Rajeswarapalanichamy, K. Iyakutti, A.K. Kushwaha, Computational Condensed Matter 14 (2018) 55.
8. Half metallic ferromagnetism in Ni based half Heusler alloys, **A. Amudhavalli**, R. Rajeswarapalanichamy, K. Iyakutti, Computational Materials Science, 148 (2018) 87.
9. Electronic and Optical Properties of CsSnI_{3-y}Cl_y (y = 0, 1, 2, 3) Perovskites: a DFT Study, R. Padmavathy, **A. Amudhavalli**, M. Manikandan, R. Rajeswarapalanichamy, K. Iyakutti, and A.K. Kushwaha, Journal of Electronic Materials 48 (2018) 1243.
10. Electronic structure, mechanical and optical properties of ternary semiconductors Si_{1-x}Ge_xC (X = 0, 0.25, 0.50, 0.75, 1), M. Manikandan, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, Philosophical Magazine 99 (2019) 905.
11. Electronic structure and optical properties of CsSnI_{3-y}Br_y (y = 0, 1, 2, 3) perovskites, R. Padmavathy, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, Int. J. Mod Phys. B, 33 (2019) 1950003.

12. Electronic and optical properties of cubic Perovskites $\text{CsPbCl}_{3-y}\text{I}_y$ ($y = 0, 1, 2, 3$), R. Padmavathy, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, *Zeitschrift fur Naturforschung A, A Journal of Physical Sciences*, 74 (2019) 905.
13. Electronic and Magnetic properties of $\text{Fe}_{2-x}\text{Co}_x\text{TiGe}$ ($x = 0, 0.5, 1, 1.5, 2$) full Heusler alloys, **A. Amudhavalli**, M. Manikandan, R. Rajeswarapalanichamy and K. Iyakutti, *Chinese Journal of Physics*, 59 (2019) 166.
14. Electronic structure and magnetic properties of XMgC ($X = \text{Li, Na, K, Rb}$), M. Manikandan, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, *Solid State Communications*, 291 (2019) 36.
15. First principles study of structural, electronic and mechanical properties of metal carbides M_2C and MC_2 ($M = \text{Os, Ir, Pt}$), M. Manikandan, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, *Solid State Communications*, 291 (2019) 43.
16. Electronic and Magnetic Properties of $\text{Fe}_{2-x}\text{Co}_x\text{TiSi}$ ($x = 0, 0.5, 1, 1.5, 2$) Heusler Alloys, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, *Journal of Electronic Materials*, 48 (2019) 6753.
17. Investigation of half- metallic and magnetic phase transition in Co_2TiZ ($Z = \text{Al, Ga, In}$) Heusler alloys, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, *Phase Transitions*, 92 (2019) 875.
18. First-principles study of structural and optoelectronic properties of $\text{CsSnI}_{3-y}\text{F}_y$ ($y = 0, 1, 2, 3$) perovskites, **A. Amudhavalli**, R. Padmavathy, R. Rajeswarapalanichamy and K. Iyakutti, *Indian Journal of Physics*, 94 (2020) 1351.
19. Band gap engineering in halide cubic perovskites $\text{CsPbBr}_{3-y}\text{I}_y$ ($y = 0, 1, 2, 3$) – A DFT study, R. Rajeswarapalanichamy, **A. Amudhavalli**, R. Padmavathy, and K. Iyakutti, *Materials Science and Engineering: B*, 258 (2020) 114560.
20. Investigation of phase transition in electronic structure and magnetic properties of $\text{Fe}_{2-x}\text{Co}_x\text{TiSn}$ Heusler alloys, **A. Amudhavalli** and R. Rajeswarapalanichamy, *Phase Transitions*, 93 (2020) 690.
21. Structural, electronic and mechanical properties of $\text{AgIn}_{1-x}\text{Ga}_x\text{S}_2$ ($X = 0, 0.25, 0.5, 0.75, 1$) Chalcogenides, R. Padmavathy, **A. Amudhavalli**, R. Rajeswarapalanichamy and K. Iyakutti, *Indian Journal of Physics*, 95(2021) 1751.

22. Electronic structure, elastic, optical and thermal properties of chalcopyrite CuBY_2 ($\text{B} = \text{In, Ga, In}_{0.5}\text{Ga}_{0.5}$; $\text{Y} = \text{S, Se, Te}$) solar cell compounds, **A. Amudhavalli**, R.Rajeswarapalanichamy, R.Padmavathy, M. Manikandan, M. Santhosh, K. Iyakutti, *Materials Today Communications*, 26 (2021) 101790.
23. Investigation of optoelectronic properties of $\text{AgIn}_{1-x}\text{Ga}_x\text{Y}_2$ ($\text{Y} = \text{Se, Te}$) semiconductors, R.Padmavathy, **A. Amudhavalli**, R.Rajeswarapalanichamy, K. Iyakutti, *Indian Journal of Physics*, 96 (2021) 1357.
24. Electronic structure, magnetic, optical and transport properties of half Heusler alloys RhFeZ ($\text{Z} = \text{P, As, Sb, Sn, Ge, Ga, In, Al}$)- a DFT study, R.Meenakshi, R.AramSenthil Srinivasan, **A. Amudhavalli**, R.RajeswaraPalanichamy, K.Iyakutti, *Phase Transitions*, 94(2021) 415.
25. Electronic structure and optical properties of $\text{CsPbF}_{3-y}\text{I}_y$ ($y = 0, 1, 2$) cubic Perovskites, **A. Amudhavalli**, R.RajeswaraPalanichamy, R.Padmavathy, K.Iyakutti, *Acta Polonica A*, 139 (2021) 692.
26. Electronic, Magnetic, and Mechanical Properties of $\text{YX}'\text{CrZ}$ ($\text{X}' = \text{Fe, Co, Ni}$; $\text{Z} = \text{Si, Ge, Sn}$) Quaternary Heusler Alloys, **A. Amudhavalli**, M. Santhosh, P. Dharmaraja, M. Manikandan and R. Rajeswara Palanichamy, *J. Supercond. Nov. Magn.* 34 (2021) 3019-3036.
27. First principles study of Co and Ni based half Heusler alloys, **A. Amudhavalli**, R.RajeswaraPalanichamy, R. Madhavan, K. Iyakutti, *Materials Science in Semiconductor Processing* 150 (2022) 106908.

PAPERS PRESENTED IN CONFERENCES/ SEMINARS/ SYMPOSIA

1. Presented a paper entitled “*Structural stability, electronic structure and mechanical properties of alkali gallium hydrides AGaH_4 ($\text{A} = \text{Li, Na}$)*” in the International Conference on Condensed Matter and Applied Physics (ICC 2015) held at Department of Physics, Govt. Engineering College, Bikaner, Rajasthan on October 30 & 31, 2015.
2. Presented a paper entitled “*Structural phase transition, electronic structure and optical properties of half Heusler alloys LiBeZ ($\text{Z} = \text{As, Sb}$)*” in the 60th DAE Solid State Physics

Symposium (DAE SSPS 2015) held at Amity University, Noida, Uttar Pradesh during December 21-25, 2015.

3. Presented a paper entitled “*First Principles Study of Structural Stability and Electronic Structure of 4d Transition Metal Carbides TMC_2 ($TM= Ru, Rh, Pd$)*” in the National Conference on Current Advances in Physics (NCCAP- 2017) held at St. John’s College Palayamkottai, Tamilnadu on February 3 & 4, 2017
4. Presented a paper entitled “*First Principles Study of Co based half metallic Half Heusler Compounds $CoYBi$ ($Y = Mn, Cr$)*” in the International Conference on Energy, Environment and Advanced Materials for a Sustainable Future (ICEEAMSF-2017) held at Kongu Engineering College, Perundurai, Erode on May 23 & 24, 2017.
5. Presented a paper entitled “*Investigation of Structural, Electronic, Mechanical and Optical Properties of Half Heusler Alloys $LiZnZ$ ($Z = As, Sb$)*” in the International Conference on Energy, Environment and Advanced Materials for a Sustainable Future (ICEEAMSF-2017) held at Kongu Engineering College, Perundurai, Erode on May 23 & 24, 2017.
6. Presented a paper entitled “*Structural, Electronic and Magnetic Properties of $CoMnSb$ and $NiMnSb$ half Heusler Alloys*” in the National Conference on Advanced Materials and its Applications (NCAMA-2K17) held at The Standard Fireworks Rajaratnam College for Women, Sivakasi on July 6 & 7, 2017.
7. Presented a paper entitled “*Structural, electronic and magnetic properties of Fe_2YAl ($Y= Ti, V, Cr$) full Heusler alloys*” in the International conference on “Advanced Functional Materials for Energy, Environment and Biomedical Applications” (AFMEEB-2017) held at Madurai Kamaraj University, Madurai on December 11 & 12, 2017.
8. Presented a paper entitled “*Electronic and magnetic properties of $Fe_{2-x}Co_xTiSn$ ($x= 0, 0.5, 1, 1.5, 2$) full Heusler alloys,*” in the International conference on “Nanoscience and Nanotechnology” (ICONN 2019) held at SRM Institute of Science and Technology, Chennai on January 28-30, 2019.
9. Presented a Paper entitled “*Structural, electronic and magnetic properties of $CoCrSb$ and $NiCrSb$ half Heusler alloys*”, in the National Conference on Functional Materials and its Applicational Aspects (NCFMAA - 2020), held at Saveetha School of Engineering, Saveetha University, Thandalam, Chennai on March 5 & 6, 2020.

PARTICIPATED CONFERENCES / SEMINARS / WORKSHOPS/ WEBINARS

- Physics Quest held at Lady Doak College, Madurai on January 27, 2012.
- National Level Seminar on “Applications of Spectroscopy in Materials Characterization” organized by Department of Physics, Fatima College, Madurai, Tamilnadu held on 22nd and 23rd August 2012.
- National Level Seminar on “Recent Trends in Novel Materials” organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu held on 28th February 2013.
- National Level Seminar on “X-RAY Crystallography” organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu held on 14th February 2014.
- One day workshop on “Quantum Entanglement” organized by School of Physics, Madurai Kamaraj University, Madurai held on August 25, 2014.
- International conference on “Condensed Matter & Applied Physics (ICC 2015)” organized by Department of Physics, Govt. Engineering College, Bikaner, Rajasthan on 30 & 31, October 2015.
- 60th DAE Solid State Physics Symposium (DAE SSPS 2015) during December 21-25, 2015 at Amity University, Noida, Uttar Pradesh.
- National Level Workshop on “Computational Physics using Gaussian” organized by PG and Research Department of Physics N.M.S.S.V.N College, Tamilnadu on February 13, 2015.
- National Level Workshop on “Current Advances in Nano and Green Chemistry” organized by PG and Research Department of Chemistry, N.M.S.S.V.N College, Tamilnadu on February 18, 2015.
- National level Seminar on “Nanoscience and Nanotechnology” Organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu on 19th February 2016.
- One day training on “Faculty Development Programme” organized by N.M.S.S.V.N College, Tamilnadu, on April 1, 2016.
- National Conference on “Current Advances in Physics (NCCAP- 2017)” organized by Department of Physics, St. John’s College Palayamkottai, Tamilnadu on February 3 & 4, 2017.

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- Workshop on “Quantum Mechanics as a Tool for Materials Investigation” organized by Department of Theoretical Physics, University of Madras, Chennai, Tamilnadu on March 17 & 18, 2017.
 - International Conference on “Energy, Environment and Advanced Materials for a Sustainable Future (ICEEAMSF-2017)” organized by Department of Physics and Chemistry, School of Science and Humanities, Kongu Engineering College, Perundurai, Erode, Tamilnadu on May 23 & 24, 2017.
 - National Conference on “Advanced Materials and its Applications (NCAMA-2K17)” organized by Department of Physics, The Standard Fireworks Rajaratnam College for Women, Sivakasi on July 6 & 7, 2017.
 - International conference on “Advanced Functional Materials for Energy, Environment and Biomedical Applications (AFMEEB-2017)” held at Madurai Kamaraj University, Madurai on December 11 & 12, 2017.
 - National level Seminar on “Spectroscopic Approaches for Biological and Physical Systems” organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu on 2nd February 2018.
 - Workshop on “Modelling and Simulation in Materials Science and Engineering Workshop” organized by Computational Material Science group, Department of Physics, Sathyabama Institute of Science and Technology, Sathyabama University, Chennai on 18th -22nd June 2018.
 - National level Seminar on “Trends in Theoretical Physics” Organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu on 22nd February 2019.
 - National level Conference on “Design and Applications of Emerging Materials” organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu on 19th February 2020.
 - International Webinar on “Thin Film Technologies in our Daily Life”, organized by Department of Physics, N.M.S.S.Vellaichamy Nadar College, Madurai, Tamilnadu on 30th May 2020.
 - Interactive Webinar on “Online Lectures in Solid States Physics (Series- 1: Electrons in Solids)”, organized by Department of Theoretical Physics, University of Madras, Chennai, Tamilnadu on June 1st -3rd, 2020.