List of Publications-Prof R.Thangavel, Dept of Physics, IIT(ISM) Dhanbad

1. Fabrication of p-CuI/n-ZnO heterostructure with a methodical interfacial charge transfer characteristics for photoelectrochemical water splitting, S Banerjee, **R Thangavel**, Materials Science in Semiconductor Processing 146, (2022) 106690, https://doi.org/10.1016/j.mssp.2022.106690 (Impact factor 3.927)

2. Dopant inculcated ZnO based photoelectrodes for revitalizing photoelectrochemical water splitting, S Banerjee, S Padhan**, R Thangavel**, Materials Chemistry and Physics 277, (2022)125548, https://doi.org/10.1016/j.matchemphys.2021.125548, (Impact Factor: 4.094)

3. T Sen, A Biswas, TK Rout, **R Thangavel**, UG Nair, Comparative study of morphological, optical and conductive properties between low and heavily zinc doped nickel oxide thin films as hole transporting material, Journal of Alloys and Compounds 889, (2022)161613. (Impact Factor: 5.316) https://doi.org/10.1016/j.jallcom.2021.161613

4. Cu doped NiO thin film photocathodes for enhanced PEC performance, P Sahoo, A Sharma, S Padhan, **R Thangavel**, Superlattices and Microstructures 159, (2021)107050, https://doi.org/10.1016/j.spmi.2021.107050 (Impact Factor: 2.658)

5. Modifying the photocatalytic property of ZnO-based photoelectrodes by introducing MgFe2O4 nanoparticles, S Banerjee, S Padhan, **R Thangavel**, Journal of Materials Science: Materials in Electronics, 1-12, https://doi.org/10.1007/s10854-021-07277-4 (Impact factor:2.478)

6. P Sahoo, A Sharma, S Padhan, **R Thangavel**, Construction of ZnO@ NiO heterostructure photoelectrodes for improved photoelectrochemical performance, International Journal of Hydrogen Energy 46 (73), (2021) 36176-36188, https://doi.org/10.1016/j.ijhydene.2021.08.154 (Impact factor : 5.739)

7. Dipali Nayak and **R Thangavel** Comparative study of the electronic and photocatalytic properties of bulk and monolayer MX2: A TB-mBJ study, Materials Science and EngineeringB 264, (2021)114944 https://doi.org/10.1016/j.mseb.2020.114944. (Impact Factor: 4.706)

8. Akash Sharma, Pooja Sahoo, Abhijit Singha, Subash Padhan, **R.Thangavel,** Visible-light Induced Photosplitting of Water using Solution-processed Cu2BaSnS4 Photoelectrodes and a Tandem Approach for Development of Pt-free Photoelectrochemical Cell, Materials Science in Semiconductor Processing 121,(2021), 105433 DOI: 10.1016/j.solener.2020.04.027. (Impact Factor: 3.085)
9. Pooja Sahoo, Akash Sharma, Subash Padhan, **R Thangavel**, Visible light driven photosplitting of water using one dimensional Mg doped ZnO nanorod arrays, , International Journal of Hydrogen Energy, 45 (2020) 22576-22588. DOI: 10.1016/j.ijhydene.2020.06.173. (Impact Factor: 4.939)
10. Akash Sharma, Pooja Sahoo, Abhijit Singha, Subash Padhan, G.Udayabhanu, **R.Thangavel**, Efficient visible-light-driven water splitting performance of sulfidation-free, solution processed Cu_2MgSnS_4 thin films: Role of post-drying temperature, Solar Energy, 203 (2020) 284-295. DOI: 10.1016/j.solener.2020.04.027. (Impact Factor: 4.674)

11. N. Prudhuvi Raju, **R Thangavel,** Theoretical investigation of spin–orbit coupling on structural, electronic and optical properties for $CuAB_2$ (A = Sb, Bi; B = S, Se) compounds using Tran–Blaha-modified Becke–Johnson method: A first-principles approach, , Journal of Alloys and Compounds, 830 (2020) 154621. DOI: 10.1016/j.jallcom.2020.154621. (Impact Factor: 4.65)
12. S Vallisree, A Sharma, **R Thangavel**, TR Lenka, Investigations of carrier transport mechanism and junction formation in Si/CZTS dual absorber solar cell technology, , Applied Physics A 126 (2020) 163. DOI: 10.1007/s00339-020-3343-9. (Impact Factor: 1.78)
13. A. Viswanath and **R. Thangavel** Hydrothermal Growth of Undoped and Zn-Doped SnO Nanocrystals: A Frequency Dependence of AC Conductivity and Dielectric Response Studies, Semiconductors, 54 (1), (2020) 73-76. DOI: 10.1134/S1063782620010261. (Impact Factor: 0.641).
14. M Malaidurai, BS Kumar, **R Thangavel,** Spin polarized carrier injection driven magneto-optical Kerr effect in Cr-doped ZnO nanorods, Physics Letters A 383 (24), (2019)2988-2992 (Impact Factor: 2.278)
15. P Sahoo, A Sharma, S Padhan, G Udayabhanu, **R Thangavel,** UV-assisted water splitting of stable Cl-doped ZnO nanorod photoanodes grown via facile sol-gel hydrothermal technique for enhanced solar energy harvesting applications, Solar Energy 193, (2019)148-163. DOI: 10.1016/j.solener.2019.09.045. (Impact Factor: 4.674)
16. Mohua Chakraborty, Dhrubojyoti Roy, Akash Sharma, **R.Thangavel**, "Post-treatment with ZnFe2O4 nanoparticles to improve photo-electrochemical performance of ZnO nanorods based photoelectrodes", Solar Energy Materials and Solar Cells, 200 (2019) 109975. DOI: 10.1016/j.solmat.2019.109975. (Impact Factor:6.019)
17. M Chakraborty, **R Thangavel**, P Komninou, Z Zhou, A Gupta "Nanospheres and nanoflowers of copper bismuth sulphide (Cu_3BiS_3): Colloidal synthesis, structural, optical and electrical characterization", , Journal of Alloys and Compounds.776 (2019) 142-148. DOI: 10.1016/j.jallcom.2018.10.151. (Impact Factor: 3.779*)*
18. S Vallisree, **R Thangavel** and T R Lenka Modelling, simulation, optimization of Si/ZnO and Si/ZnMgO heterojunction solar cells, Mater. Res. Express 6 (2019) 025910. DOI: 10.1088/2053-1591/aaf023. (Impact factor :1.929)
19. Mukesh Kumar Pandey, M Malaidurai, **R Thangavel** and Asit Kumar Kar, Magnetoimpedance study of nickel incorporated diamond like carbon thin films, Material Research Express, 6 (9), (2019) 096115. DOI: 10.1088/2053-1591/ab32b6. (Impact factor: 1.929).
20. Joydip Dutta, Vineet Kumar Rai, M Malaidurai and **R.Thangavel,** Development of Y_2O_3: Ho^{3+}/Yb^{3+} Upconverting Nanophosphors for Enhancing Solar Cell Efficiency of Dye-Sensitized Solar Cells, , IEEE Journal of Photovoltaics 9(4), (2019), 1040. DOI: 10.1109/JPHOTOV.2019.2912719. (Impact factor: 3.712)
21. K.Janani, S.Ramasubramanian, **R.Thangavel** and P.Thiyagarajan, Effect of gadolinium

concentration on the luminescence of $LiYF_4$: Yb^{3+}/Er^{3+} phosphor, , Solid State Sciences 91 (2019) 119. DOI: 10.1016/j.solidstatesciences.2019.03.025. (Impact factor: 2.434)

22. R.Vettumperumal, J. RubyJemima, S.Kalyanaraman and **R.Thangavel**, Analysis of electronic and optical properties of copper iodide (γ-CuI) by TB – mBJ method – A promising optoelectronic material, Vacuum 162 (2019), 156. DOI: 10.1016/j.vacuum.2019.01.047. (Impact factor: 2.906)
23. Rudranarayan Khatua, Smruti Ranjan Sahoo, Sagar Sharma, **R. Thangavel** and Sridhar Sahu Anisotropic charge transport properties of chrysene derivatives as organic semiconductor: A computational study, Journal of Physical Organic Chemistry, 31 (2018) e3859, DOI:10.1002/poc.3859, (Impact factor: 1.536)
24. P Kumar, HK Malik, A Ghosh, **R Thangavel**, K Asokan "An insight to origin of ferromagnetism in ZnO and N implanted ZnO thin films: Experimental and DFT approach", Journal of Alloys and Compounds 768, (2018) 323-328. DOI: 10.1016/j.jallcom.2018.07.097. (*Impact Factor: 3.779)*
25. A Sharma, M Chakraborty, **R Thangavel** "Enhanced photoelectrochemical performance of hydrothermally grown tetravalent impurity (Si^{4+}) doped zinc oxide nanostructures for solar water splitting applications", **,** Journal of Materials Science: Materials in Electronics 29 (17), (2018) 14710-14722. DOI: 10.1007/s10854-018-9608-9. (*Impact Factor: 2.324)*
26. M Malaidurai, **R Thangavel**, "Study of structural and magnetic properties of co-precipitated α-Fe_2O_3 nanocrystals" Superlattices and Microstructures, 120, (2018), 553-560. DOI: 10.1016/j.spmi.2018.06.025. (*Impact Factor: 2.099)*
27. Manish Babu Agarwal, Akash Sharma, M Malaidurai, **R Thangavel** "Effect of Sn doping on structural, mechanical, optical and electrical properties of ZnO nanoarrays prepared by sol-gel and hydrothermal process"**,** Superlattices and Microstructures, 117, (2018) 342-350. DOI: 10.1016/j.spmi.2018.03.061. (*Impact Factor: 2.099)*
28. S Vallisree, **R Thangavel**, TR Lenka "Theoretical investigations on enhancement of photovoltaic efficiency of nanostructured CZTS/ZnS/ZnO based solar cell device", Journal of Materials Science: Materials in Electronics 29 (9), (2018)7262-7272. DOI: 10.1007/s10854-018-8796-7. (*Impact Factor: 2.324)*
29. D.K. Chaudhary, A. Ghosh, **R. Thangavel**, L. Kumar "Bulk-heterojunction hybrid solar cells with non-toxic, earth abundant stannite phase $CuZn_2AlS_4$ nanocrystals", , Thin Solid Films. 649 (2018) 202–209. DOI: 10.1016/j.tsf.2018.01.055. (*Impact Factor: 1.939)*
30. B. Santoshkumar, S. Kalyanaraman, **R. Thangavel**, T. Santhoshkumar, G. Annadurai, I. V. Kityk, J. Jedryka, K. Ozga, A. Slezak "Optically poled SHG and THG effects in cesium doped zinc oxide nanorods" J. Mater. Sci. Mater. Electron., 29, (2018) (18), 15291–15298. DOI: 10.1007/s10854-018-8794-9. (*Impact Factor: 2.324)*
31. A. Sharma, M. Chakraborty, **R. Thangavel**, G. Udayabhanu "Hydrothermal growth of undoped and boron doped ZnO nanorods as a photoelectrode for solar water splitting applications" J. Sol-Gel Sci. Technol. 85 (2018) 1-11. DOI: 10.1007/s10971-017-4536-3. (*Impact Factor: 1.745)*

32. B. Santoshkumar, S. Kalyanaraman, **R. Thangavel**, T. Santhoshkumar, S. Chakraborty, G. Annadurai, I. V. Kityk, J. Jedryka, A. Wojciechowski, K. Ozga, A. Slezak "Experimental and theoretical analyses of the nonlinear optical effects in magnesium and copper co-doped zinc oxide nanorods", J. Alloys Compd. 734 (2018) 275–281. DOI: 10.1016/j.jallcom.2017.10.287. (*Impact Factor: 3.779)*
33. Utsa Das, **R Thangavel** and S Dhar First principles study of the structural, electronic and optical properties of epitaxial GaSb1−x−yNyBix, lattice matched to GaSb, Mater. Res. Express 5 (2018) 115901. DOI: 10.1088/2053-1591/aadbf1. (Impact factor: 1.929)
34. A. Ghosh, **R. Thangavel,** Electronic structure and optical properties of iron based chalcogenide FeX_2 (X = S, Se, Te) for photovoltaic applications: a first principle study, Indian J. Phys. 91 (2017). (11), 1339–1344. DOI: 10.1007/s12648-017-1046-7. (*Impact Factor: 0.967)*
35. A. Ghosh, R. Thangavel, A. Gupta "Solution-processed Cd free kesterite Cu_2ZnSnS_4 thin film solar cells with vertically aligned ZnO nanorod arrays", J. Alloys Compd. 694 (2017) 394–400. DOI: 10.1016/j.jallcom.2016.09.325. (*Impact Factor: 3.779)*
36. S. Kumar, **R. Thangavel** "Gd doping effect on structural, electrical and magnetic properties of ZnO thin films synthesized by sol-gel spin coating technique"**,** Electron. Mater. Lett. 13 (2017) 129–135. DOI: 10.1007/s13391-017-6164-z. (*Impact Factor: 2.882)*
37. B. Santoshkumar, A. Biswas, S. Kalyanaraman, **R. Thangavel**, G. Udayabhanu, G. Annadurai, S. Velumani "Influence of defect luminescence and structural modification on the electrical properties of Magnesium Doped Zinc Oxide Nanorods", Superlattices Microstruct. 106 (2017) 58–66. DOI: 10.1016/j.spmi.2017.03.039. (*Impact Factor: 2.099)*
38. V. Usha, S. Kalyanaraman, R. Vettumperumal, **R. Thangavel** "A study of frequency dependent electrical and dielectric properties of NiO nanoparticles" Phys. B Condens. Matter. 504 (2017) 63–68. DOI: 10.1016/j.physb.2016.10.011. (*Impact Factor: 1.453)*
39. Mohua Chakraborty, Preetilata Mahapatra, **R. Thangavel** Structural, optical and electrochemical properties of Al and Cu co-doped ZnO nanorods synthesized by a hydrothermal method, , Thin Solid Films 612 (2016) 49-54. DOI: 10.1016/j.tsf.2016.05.038. (*Impact Factor: 1.939)*
40. M Chakraborty, D Roy, A Biswas, R **Thangavel**, G Udayabhanu, Structural, optical and photo-electrochemical properties of hydrothermally grown ZnO nanorods arrays covered with α-Fe 2 O 3 nanoparticles, , RSC advances 6 (79), (2016)75063-75072(*Impact Factor: 3.119)*
41. Mohua Chakraborty, Anima Ghosh, **R Thangavel**, K Asokan, Conduction mechanism in mesoporous hematite thin films using low temperature electrical measurements and theoretical electronic band structure calculations, , Journal of Alloys and Compounds, 664, (2016) 682-689. DOI: 10.1016/j.jallcom.2016.01.019. (*Impact Factor: 3.779)*
42. B Santoshkumar, S Kalyanaraman, R Vettumperumal, **R Thangavel**, I.V Kityk, S Velumani Structure-dependent anisotropy of the photoinduced optical nonlinearity in calcium doped ZnO nanorods grown by low cost hydrothermal method for photonic device applications, , Journal of

Alloys and Compounds, 658, (2016).435-439. DOI: 10.1016/j.jallcom.2015.10.067. (*Impact Factor: 3.779)*

43. R Vettumperumal, S Kalyanaraman, B Santoshkumar, **R Thangavel**, Estimation of Electron-Phonon coupling and Urbach Energy in Group-I elements doped ZnO Nanoparticles and Thin Films by Sol-Gel Method, Materials Research Bulletin, 77, (2016).101-110. DOI: 10.1016/j.materresbull.2016.01.015. (*Impact Factor: 2.873)*
44. Mohua Chakraborty, **R Thangavel**, Amrita Biswas, G Udayabhanu Facile synthesis, and the optical and electrical properties of nanocrystalline ZnFe2O4 thin films, , Crystal Engineering Communications 18(7), (2016).3095-3103. DOI: 10.1039/C5CE02553B. (*Impact Factor: 3.304)*
45. **Anima Ghosh, Soubantika Palchoudhury, R.Thangavel, Ziyou Zhou, Nariman Naghibolashrafi , Karthik Ramasamy and Arunava Gupta A new family of wurtzite-phase Cu2ZnAS4−x and CuZn2AS4 (A = Al, Ga, In) nanocrystals for solar energy conversion applications, , Chemical communications,52(2) , (2016).264-267. DOI: 10.1039/C5CC07743E. (*Impact Factor: 6.29)***
46. Anima Ghosh, **R.Thangavel**, Arunava Gupta Chemical Synthesis, Characterization and Theoretical Investigations of Stannite Phase $CuZn_2AlS_4$ Nanocrystals, , New Journal of Chemistry, 40, 1149-1154 (2016). DOI: 10.1039/C5NJ02365C. (*Impact Factor: 3.201)*
47. R.Vettumperumal, S.Kalyanaraman, and **R.Thangavel**, Modification of Orientation, Surface and Optical Properties of ZnO Films by Cesium and Erbium Codoping Using Sol–Gel Method, , J. Nanosci. Nanotechnol 16(9) (2016) 9667. DOI: 10.1166/jnn.2016.12153. (Impact factor: 0.49)
48. R.Vettumperumal, S.Kalyanaraman, B.Santoshkumar and **R.Thangavel** Estimation of electron–phonon coupling and Urbach energy in group-I elements doped ZnO nanoparticles and thin films by sol–gel method, **,** Mater. Res. Bull. 77(2016) 101. DOI: 10.1016/j.materresbull.2016.01.015. (Impact factor: 4.019)
49. V. Usha, S Kalyanaraman, **R. Thangavel**, R Vettumperumal Effect of catalyst on the synthesis of CuO nanoparticles: structural and optical properties by sol-gel method, , Superlattices and Microstructures, 86, (2015) 203-210. DOI: 10.1016/j.spmi.2015.07.053. (*Impact Factor: 2.099)*
50. M Chakraborty, Anima Ghosh, **R Thangavel** Experimental and theoretical investigations of structural and optical properties of copper doped ZnO nanorods, Journal of Sol-Gel Science and Technology, 74, (3), (2015) 756–764. DOI: 10.1007/s10971-015-3660-1. (*Impact Factor: 1.745)*
51. R Vettumperumal, S Kalyanaraman, **R Thangavel**,Optical constants and near infrared emission of Er doped ZnO sol-gel thin films, Journal of Luminescence 158, (2015)493–500. DOI: 10.1016/j.jlumin.2014.09.047. (*Impact Factor: 2.732)*
52. A Ghosh, **R Thangavel**, M Rajagopalan Electronic and optical modeling of solar cell compound $CuXY_2$ (X= In, Ga, Al; Y= S,Se, Te): first-principles study via Tran–Blaha-modified Becke–Johnson exchange potential approach, Journal of Materials Science 50 (4), (2015) 1710-1717. DOI: 10.1007/s10853-014-8732-z. (*Impact Factor: 2.993)*

53. , R Vettumperumal, S Kalyanaraman, **R Thangavel** Effect of Er concentration on surface and optical properties of K doped ZnO sol–gel thin films, Superlattices and Microstructures 83, (2015) 237-250. DOI: 10.1016/j.spmi.2015.03.028. (*Impact Factor: 2.099)*
54. Shang-Hsuan Wu, Sanjeev Kumar, **R. Thangavel**, Shien-Uang Jen, Wei-Chun Cheng and Y. C. Chang Erratum to: Structural and optical properties of Na doped ZnO nanocrystalline thin films synthesized using sol–gel spin coating technique, , Journal of Sol-Gel Science and Technology 71(2014) 192. DOI: 10.1007/s10971-013-3049-y. (Impact factor: 2.008)
55. R Vettumperumal, S Kalyanaraman, **R Thangavel** Photoconductive UV detectors based heterostructures of Cd and Mg doped ZnO sol gel thin films, , Materials Chemistry and Physics 145 (2014) 237-242. DOI: 10.1016/j.matchemphys.2014.02.008. (*Impact Factor: 2.210)*
56. S Kumar, P Kaur, CL Chen, **R Thangavel**, CL Dong, YK Ho, J F Lee,Structural, optical and magnetic characterization of Ru doped ZnO nanorods, Journal of Alloys and Compounds 588, (2014)705-709. DOI: 10.1016/j.jallcom.2013.11.137. (*Impact Factor: 3.779)*
57. Sanjeev Kumar and **R. Thangavel** Structural, optical and magnetic characterization of ZnO nanorods synthesized using hydrothermal technique at low temperature, , Journal of Sol-Gel Science and Technology, 70 (2014)506. DOI: 10.1007/s10971-014-3313-9. (Impact factor: 2.008)
58. R. Vettumperumal, S. Kalyanaraman, **R.Thangavel**,A comparative study of structural, surface morphology and optical properties of Na and Mg codoped ZnO nanocrystalline thin films prepared using sol-gel spin coating technique" Journal of Molecular Structure 1059 (2014) 61-67. DOI: 10.1016/j.molstruc.2013.11.044. (*Impact Factor: 2.011)*
59. R Vettumperumal, S Kalyanaraman, B Santoshkumar, **R Thangavel** Magnetic Properties of High Li doped ZnO Sol gel thin films", Materials Research Bulletin 50 (2014) 7-11. DOI: 10.1016/j.materresbull.2013.10.015. (*Impact Factor: 2.873)*
60. R Vettumperumal, S Kalyanaraman, **R. Thangavel** "Nanocrystalline $Zn_{1-x-y}Be_xMg_yO$ thin films synthesized by the sol–gel method: structural and near infrared photoluminescence properties", , Journal of Sol-Gel Science and Technology 68 (2013) 334-340. DOI: 10.1007/s10971-013-3174-7. (*Impact Factor: 1.745)*
61. Anima Ghosh, **R.Thangavel** and M.Rajagopalan "First principles study of electronic and optical properties of Cu_2ZnSnX_4 (X= S, Se) solar absorbers by Tran-Blaha modified Becke-Johnson potential approach", *Jouranl of Materials Science 48 (2013) 8259–8267.* DOI: 10.1007/s10853-013-7638-5. (*Impact Factor: 2.993)*
62. Parmod Kumar, Hitendra K. Malik, Anima Ghosh, **R. Thangavel**, and K. Asokan "Band gap tuning in highly c-axis oriented $Zn_{1-x}Mg_xO$ thin films, , *Applied Physics Letters 102 (2013) 221903.*DOI: 10.1063/1.4809575 (*Impact Factor: 3.495)*
63. **R.Thangavel**, Mohammad Tariq Yaseen, Yia- Chung Chang, Chia-Hao Hsu, Kuo-Wei Yeh, Maw Kuen Wu "Near infrared to UV dielectric functions of Al doped ZnO films deposited on c-plane sapphire substrate using pulsed laser deposition", , *Journal of Physics and Chemistry of Solids*

*,74(2013)1533–1537.*DOI: 10.1016/j.jpcs.2013.05.020 (*Impact Factor: 2.207)*

64. S. Ramasubramanian, **R. Thangavel**, J. Kumar, M. Rajagopalan, A Thamizhavel, K. Asokan and D. K. Avasthi "Study on the Ferromagnetism in Co and N doped ZnO thin film", *Current Applied Physics, 13 (2013) 1547-1553.* DOI: 10.1016/j.cap.2013.05.010. (*Impact Factor: 2.058)*
65. R. Vettum Perumal, S. Kalyanaraman, and **R.Thangavel** "Enhancement of optical conductivity in the ultra-violet region of Cs doped ZnO sol gel thin films", *Journal of sol-gel science and technology 66 (2013) 206–211.*DOI: 10.1007/s10971-013-2993-x. (*Impact Factor: 1.745)*
66. S. Kalyanaraman, **R.Thangavel** and R.VettumPerumal "High mobility formation of p-type Al doped ZnO Films with annealing in NH_3 Ambient", , *Journal of Physics and chemistry of solids 74, (2013) 504-508.*DOI: 10.1016/j.jpcs.2012.11.019. (*Impact Factor: 2.207)*
67. S. Kalyanaraman, **R.Thangavel** and R.VettumPerumal "Structural and electrical properties of Li Doped ZnO under Ar/H_2 atmosphere", *Journal of Sol-gel Science and technology 65, (2013) 238–242.* DOI: 10.1007/s10971-012-2930-4. (*Impact Factor: 1.745)*
68. Sanjeev Kumar; C. L. Chen ; C. L. Dong; Y. K. Ho ; J. F. Lee ;T. S. Chan ; **R. Thangavel**; T. K. Chen; B. H. Mok; S. M. Rao; M. K. Wu "Structural, optical, and magnetic characterization of Co and N co-doped ZnO nanopowders", *Journal of Materials Science, 48 (2013) 2618-2623.* DOI: 10.1007/s10853-012-7055-1. (*Impact Factor:2.993)*
69. Sanjeev Kumar, C.L. Chen, C.L. Dong, Y.K. Ho, J.F. Lee, T.S. Chan, **R. Thangavel**, T.K. Chen, B.H. Mok, S.M. Rao, M.K. Wu "Room temperature ferromagnetism in Ni doped ZnS nanoparticles", *Journal of Alloys and Compounds 554 (2013) 357–362.* DOI: 10.1016/j.jallcom.2012.12.001. (*Impact Factor: 3.779)*
70. **R. Thangavel** and Yia-Chung Chang "Investigations on Structural, Optical and electrical properties of p-type ZnO nanorods using hydrothermal method**",** , *Thin Solid Films,520 (2012)2589.* DOI: 10.1016/j.tsf.2011.11.010. (*Impact Factor: 1.939)*
71. **R. Thangavel**, Rakesh Singh Moirangthem, Wei-Shan Lee, Yia-Chung Chang, Pei-Kuen Wei and J.Kumar "Cesium doped and undoped ZnO Nanocrystalline thin films: a Comparative study of structural and Micro-Raman investigation of optical phonons", , *Journal of Raman Spectroscopy 41, (2010) 1304–1310.*DOI: 10.1002/jrs.2599. (*Impact Factor: 2.879)*
72. Munawar Basha, S. Ramasubramanian, **R.Thangavel**, M. Rajagopalan and J. Kumar "Magnetic properties of Ni doped gallium nitride with vacancy induced defect", , Journal of Magnetism and Magnetic Materials, 322 (2010) 238-241. DOI: 10.1016/j.jmmm.2009.09.028. (*Impact Factor: 3.046)*
73. S. Ramasubramanian, M. Rajagopalan, J. Kumar and **R.Thangavel** "Electronic and optical properties of mixed anion layered oxychalcogenide semiconductors: An ab initio study", **,** *Journal of Applied Physics, 106, (2009) 023720*. DOI: 10.1063/1.3184345. (*Impact Factor: 2.176)*
74. S. Ramasubramanian, M. Rajagopalan, **R. Thangavel**, and J. Kumar,Ab initio study on elastic and thermodynamical properties of Ti1−xZrxC"," *The European Physical Journal B, 69 (2009)*

265–268. DOI: 10.1140/epjb/e2009-00165-8. (*Impact Factor: 1.536).*

75. S. Ramasubramanian, **R. Thangavel**, M. Rajagopalan "Theoretical investigation of the electronic and optical properties of Zn_2OX (X = S, Se, Te) in chalcopyrite phase by full potential methods", , J. Kumar, *Journal of Alloys and Compounds 479 (2009) 414–419.* DOI: 10.1016/j.jallcom.2008.12.118. (*Impact Factor: 3.779)*
76. R. Jothilakshmi, V. Ramakrishnan, **R. Thangavel**, J.Kumar, Andrei Sarua and Martin Kuball "Micro-Raman Scattering Spectroscopy Study of Li doped and undoped ZnO needle crystals", , *Journal of Raman Spectroscopy, 40 (2009) 556–561.*DOI: 10.1002/jrs.2164. (*Impact Factor: 2.879)*
77. **R. Thangavel**, M. Rajagopalan and J. Kumar "First principles prediction of half-metallic ferromagnetism in $Cd(TM)O_2$ (TM= Cr, Mn, Fe, Co, Ni) compounds", *Physica B: Condensed Matter, 403 (2008) 2768-2772.*DOI: 10.1016/j.physb.2008.02.007. (*Impact Factor: 1.453)*
78. **R. Thangavel**, M.Rajagopalan and J. Kumar "First-principle calculations of structural stability of $II\text{-}O_{1-x}VI_x$ (II-Zn, Cd and VI-S, Se, Te) ordered chalcopyrite semiconductors", , *Physica B: Condensed Matter, 403 (2008) 1824-1830.* DOI: 10.1016/j.physb.2007.10.013 (*Impact Factor: 1.453)*
79. **R. Thangavel**, M. Rajagopalan and J. Kumar "Ab initio prediction of half-metallic ferromagnetism in $Zn(TM)O_2$ (TM= Cr, Mn, Fe, Co, Ni) compounds", *Journal of Magnetism and Magnetic Materials, 320 (2008)172-176.* DOI: 10.1016/j.jmmm.2007.08.020. (*Impact Factor: 3.046)*
80. **R. Thangavel**, M. Rajagopalan and J. Kumar "First-principle study of structural stability and electronic properties of $Zn_{1-x}BexO$ semiconductor alloy**",** *Physica Status Solidi (b) Basic Solid State Physics, 244 (2007) 3183-3189.* DOI: 10.1002/pssb.200743097. (*Impact Factor: 1.729)*
81. **R. Thangavel**, V. Sabarinathan, S. Ramasamy and J. Kumar "Investigations on the growth of Zinc Oxide crystals from molten hydrous KOH solution and on the impedance analysis of Zinc Oxide crystals", *Materials Letters, 61 (2007) 4090-4093.* DOI: 10.1016/j.matlet.2007.01.025. (*Impact Factor: 2.687)*
82. **R.Thangavel**, G. Prathiba, B. Anto Naanci, M. Rajagopalan and J. Kumar "First principle calculations of the ground state properties and structural phase transformation for ternary chalcogenide semiconductor under high pressure"*Computational Materials Science, 40 (2007)193-200.* DOI: 10.1016/j.commatsci.2006.11.013. (*Impact Factor: 2.530)*
83. **R. Thangavel**, M. Rajagopalan and J "Theoretical investigations on $ZnCdO_2$ and $ZnMgO_2$ alloys: A first principle study", Kumar, *Solid State Communications, 137 (2006) 507-511.* DOI: 10.1016/j.ssc.2005.12.014. (*Impact Factor: 1.549)*
84. V. Suresh Kumar, P. Puviarasu, K. Thangaraju, **R. Thangavel**, V. Baranwal, F. Singh, T. Mohanty, D. Kanjilal, K. Asokan and J. Kumar "Effect of swift heavy ions of silver and oxygen on GaN", *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions*

with Materials and Atoms, 244 (2006) 145- 148. DOI: 10.1016/j.nimb.2005.11.065. (*Impact Factor: 1.323)*

85. D. Jayalakshmi, R. Kesavamoorthy, **R. Thangavel** and J. Kumar "Investigations on the vibrational spectroscopy and on the thermal behaviour of bis-thiourea zinc acetate - BTZA", *Physica B: Condensed Matter, 371 (2006) 1-4.* DOI: 10.1016/j.physb.2005.08.040. (*Impact Factor: 1.453)*
86. Vipul Srivastava, V. Sureshkumar, P. Puviarasu, K. Thangaraju, **R. Thangavel** and J. Kumar "Growth and characterization of gallium nitride nanowire", *Journal of Crystal Growth, 275 (2005) e2367- e2369.* DOI: 10.1016/j.jcrysgro.2004.11.338. (*Impact Factor: 1.742)*

List of Book Chapters published in international level

1. J. Kumar,S. Ramasubramanian, **R. Thangavel**, M. Rajagopalan "On the Optical and Magnetic Properties of Doped-ZnO" , ZnO Nanocrystals and Allied Materials Springer Series in Materials Science" Volume 180, 2014, pp 309-329. DOI: 10.1007/978-81-322-1160-0_15.

List of paper publications in national conference proceedings:

1. **R.Thangavel**, L. Dayana, N.V. Chandra Shekar, P. Ch. Sahu, M. Rajagopalan and J. Kumar Synthesis of novel $MgZnO_2$ solid solution with defect chalcopyrite structure, , DAE-SSPS (India) V52 (2007), pp.939-940. DOI not available
2. **R. Thangavel**, M. Rajagopalan and J. Kumar Theoretical Investigations On ZnO and $Zn_{1-x}Cd_xO$ Alloy: A First Principle Study", "DAE-SSPS (India) V 50 (2005), pp 591-592. DOI: 10.1016/j.ssc.2005.12.014.
3. Anima Ghosh**, R.Thangavel** "Structural and optical properties of Cu_2ZnSnX_4(X= S, Se) new solar cell absorbers: A First principles study", , published in conference article ALS-2012 (arranged by Department of Applied Physics, ISM, Dhanbad). DOI not available
4. Anima Ghosh and **R. Thangavel** and M. Rajagopalan "Ab initio study on structural and optical properties of $CuZn_2AlS_4$". Accepted in cmdays-13(arranged by NIT, Rourkela). DOI not available
5. S. Vijayalakshmi, S. Kalyanaraman and **R. Thangavel** "DFT and NBO Analyses of 4, 4' Sulfonyldiphenol and Hyperpolarizability Calculations using HF", published in conference article ALS-2012 (arranged by Department of Applied Physics, ISM, Dhanbad). DOI not available
6. R. Vettumperumal, S. Kalyanaraman and **R. Thangavel** "Effect of Mg in Na doped ZnO thin flims through phonon behaviour", published in conference article ALS-2012 (arranged by Department of Applied Physics, ISM, Dhanbad). DOI not available
7. Anima Ghosh, **R. Thangavel** and M. Rajagopalan "First-Principles study of the structural and optical modelling of CuGaS2 and CuInS2 Solar Cell ternary compounds", accepted in SPPS-2013 (organised by Department of Applied Physics, ISM, Dhanbad). DOI not available

List of paper publications in international conference proceedings:

1. Mohammad T. Yaseen, **R. Thangavel** , Rakesh S. Moirangthem , Yia-Chung Chang, "Huge SERS enhancement via ZnO nanowires on gold nanoislands", Proc. SPIE 8457, Plasmonics: Metallic Nanostructures and Their Optical Properties X, 84572D (October 9, 2012); DOI:10.1117/12.929396.
2. Anima Ghosh, **R. Thangavel** and M.Rajagopalan "A comparative study of structural and optical properties of Cu_2ZnSnS_4 nanocrystals for Photovoltaic applications", AIP Conference Proceedings 1591, 1422 (2014); (organised by Thapar University, Patiala, Punjab). https://doi.org/10.1063/1.4872982
3. Hydrothermal synthesis, structural and optical properties of transition metal (Zn, Fe, Co) doped SnO nanocrystals, AV Gowd, M Chakraborty, **R Thangavel**, K Ashokan, J. Kumar, International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT) – 2016, pp 2336- 2340, DOI: 10.1109/ICEEOT.2016.7755111
4. A. Sharma, M. Chakraborty, Z. Anwar, P. Sahoo, **R. Thangavel**, Structural, optical and photoelectrochemical properties of trivalent impurity (B3+) doped ZnO nanorods grown by facile hydrothermal technique, in: 2017 Int. Conf. Energy, Commun. Data Anal. Soft Comput., IEEE, 2017: pp. 2491–2493. DOI: 10.1109/ICECDS.2017.8389900.
5. S. Vallisree, **R. Thangavel**, T.R. Lenka, Comparative characteristics study of the effect of various gate dielectrics on ZnO TFT, in: 2017 Int. Conf. Energy, Commun. Data Anal. Soft Comput., IEEE, 2017: pp. 3909–3916. DOI:10.1109/ICECDS.2017.8390197
6. A. Sharma, P. Sahoo, **R. Thangavel**, A study on photoelectrochemical properties of ZnO@ZnS nanostructures synthesized via facile ion-exchange approach, in: AIP Conf. Proc., 2018: p. 030015. DOI:10.1063/1.5035217.
7. A.V. Gowd, R. Thangavel, Control surface morphology, structural and optical properties of Cu2O nanocrystals by using the hydrothermal technique, AIP Conf. Proc. 1961 (2018) 2–7. DOI:10.1063/1.5035216.
8. P. Sahoo, **R. Thangavel**, Effect of annealing temperature on physical properties of solution processed nickel oxide thin films, AIP Conf. Proc. 1961 (2018) 1–5. DOI:10.1063/1.5035243.
9. M. Malaidurai, V. Bulusu, S. De, **R. Thangavel**, Investigations on Structural and Giant Magneto Impedance, AIP Conf. Proc. 1961 (2018) 3. DOI:10.1063/1.5035252.
10. M. Chakraborty, **R. Thangavel**, K. Asokan, N doped ZnO and ZnO nanorods based p-n homojunction fabricated by ion implantation, AIP Conf. Proc. 1953 (2018). DOI:10.1063/1.5032702.
11. A. Sharma, M. Chakraborty, **R. Thangavel**, Investigations on photoelectrochemical performance of boron doped ZnO nanorods synthesized by facile hydrothermal technique, AIP Conf. Proc. 1953 (2018) 1–5. DOI:10.1063/1.5032963.

12. A. Sharma, **R. Thangavel**, Cost-effective fabrication of Cu2CoSnS4 thin films for thin film photovoltaics, in: 2018 3rd Int. Conf. Microw. Photonics, IEEE, 2018: 2–3. DOI: 10.1109/ICMAP.2018.8354640
13. P. Sahoo, A. Sharma, **R. Thangavel**, Structural, optical and electrical properties of chlorine doped ZnO nanorods for photovoltaic applications, in: 2018 3rd Int. Conf. Microw. Photonics, IEEE, 2018: pp. 1–2. DOI:10.1109/ICMAP.2018.8354642.
14. M. Malaidurai, V. Bulusu, **R. Thangavel**, Synthesis, characterization, and investigation of ambipolar behaviour on FeVO4 nanocrystals, (2018) 4–5. DOI: 10.1109/ICMAP.2018.8354641
15. V. Sivathanu, **R.Thangavel**, and T.R.Lenga Modelling of CZTS/ZnS/AZO solar cell for Efficiency Enhancement, in: 2018 3rd Int. Conf. Microw. Photonics, IEEE, 1–2. DOI: 10.1109/ICMAP.2018.8354643.
16. Hydrothermal synthesis, structural and optical investigations of undoped and Mg doped ZnO nanorods, P Sahoo, A Sharma, R Thangavel, AIP Conference Proceedings 2100 (1), 020095 (2019). DOI: 10.1063/1.5098649.
17. Synthesis and characterization of one-step spin-coated organic perovskite (CH3NH3PbI3) thin films for photovoltaic applications, A Sharma, **R Thangavel,** AIP Conference Proceedings 2100 (1), 020014 (2019). DOI: 10.1063/1.5098568.
18. A study of electronic band structure and spin orbit coupling of monolayer WSe2 for optoelectronic applications, D Nayak, **R Thangavel**, AIP Conference Proceedings 2115 (1), 030474 (2019). DOI: 10.1063/1.5113313.
19. Influence of Cu incorporation on physical properties of nickel oxide thin films synthesized by sol-gel method, P Sahoo, A Sharma, **R Thangavel**, AIP Conference Proceedings 2115 (1), 030621 (2019). DOI: 10.1063/1.5113460.
20. Self-cleaning properties of nanostructured TiO2 thin films synthesized via facile, cost-effective spin coating technique, A Kumar, VK Saxena, **R Thangavel**, AIP Conference Proceedings 2115 (1), 030319 (2019). DOI: 10.1063/1.5113158.
21. Enhancement of Solar-to-Hydrogen Conversion Efficiency Achieved for Silicon Doped ZnO Nanorods, A Sharma, **R Thangavel,** International Workshop on the Physics of Semiconductor and Devices, IWPSD 2017: Springer Proceedings in Physics, 215 (2019)1285-1291, https://link.springer.com/book/10.1007/978-3-319-97604-4.
22. Effect of Al Doping on Hydrothermal Growth and Physical Properties of Doped ZnO Nanoarrays for Optoelectronic Applications, MB Agarwal, M Malaidurai, A Sharma, **R Thangavel**, Materials Today: Proceedings 21, 1781-1786 (2020). DOI: 10.1016/j.matpr.2020.01.231.
23. Study of the optical and electrochemical performance of transition metal based electrocatalysts, S Banerjee, **R Thangavel**, AIP Conference Proceedings 2220 (1), 020132 (2020). DOI:

10.1063/5.0001517.

24. Tuning the electronic and optical properties of monolayer MoSe2 by uniaxial tensile strain for optoelectronics, D Nayak, **R Thangavel**, AIP Conference Proceedings 2220 (1), 100009 (2020). DOI: 10.1063/5.0001643.