

**A. Journal Articles**

1. Abbott B.P.\*, Bhandare, R., Chaturvedi M., Dave I., George J., Khursheed M., Malik A., Pai S.A., Pant B.C., Raja S., Rajan C., Sharma P., ShyamSundar S., Thondapu S.R. Verma Y. et al.  
Gravitational-wave constraints on the equatorial ellipticity of millisecond pulsars  
*Astrophysical Journal Letters*, 902, L21 (2020)
2. Abbott B.P.\*, Bhandare, R., Chaturvedi M., Dave I., George J., Khursheed M., Malik A., Pai S.A., Pant B.C., Raja S., Rajan C., Sharma P., ShyamSundar S., Thondapu S.R. et al.  
GW190412: Observation of a binary-black-hole coalescence with asymmetric masses  
*Physics Letters D*, 102, 043015(1-29) (2020)
3. Abbott B.P.\*, Bhandare, R., Chaturvedi M., Dave I., George J., Khursheed M., Malik A., Pai S.A., Pant B.C., Raja S., Rajan C., Sharma P., ShyamSundar S., Thondapu S.R. et al.  
GW190425: Observation of a compact binary coalescence with total mass  $\sim 3.4 M_{\odot}$   
*The Astrophysical Journal Letters*, 892, L3 (2020)
4. Abbott B.P.\*, Bhandare, R., Chaturvedi M., Dave I., George J., Khursheed M., Malik A., Pai S.A., Pant B.C., Raja S., Rajan C., Sharma P., ShyamSundar S., Thondapu S.R. et al.  
GW190521: A binary black hole merger with a total mass of  $150 M_{\odot}$   
*Physical Review Letters*, 125, 101102(1-17) (2020)
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GW190814: Gravitational waves from the coalescence of a 23 solar mass black hole with a 2.6 solar mass compact object  
*The Astrophysical Journal Letters*, 896, 1-20 (2020)
6. Abbott B.P.\*, Bhandare, R., Chaturvedi M., Dave I., George J., Khursheed M., Malik A., Pai S.A., Pant B.C., Raja S., Rajan C., Sharma P., ShyamSundar S., Thondapu S.R. et al.  
Properties and astrophysical implications of the  $150 M_{\odot}$  binary black hole merger GW190521  
*Astrophysical Journal Letters*, 900, L13 (2020)
7. Ahlawat A., Khan A.A., Deshmukh P., Shirolkar M.M.\*, Li J.\*, Wang H.\*, Choudhary.R.J.\*, Karnal A.K., Satapathy S.  
Flexible nano composite films of  $\text{CoFe}_2\text{O}_4/(0.65\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3-0.35\text{PbTiO}_3)/\text{PMMA}$  for non-volatile memory applications  
*Materials Letters*, 278, 128425(1-4) (2020)
8. Ani A.\*, Poornesh P.\*, Nagaraja K.K.\*, Kolesnikov E.\*, Shchetinin I.V.\*, Petwal V.C. et al.  
Tuning of CO gas sensing performance of spray pyrolyzed ZnO thin films by electron beam irradiation  
*Materials Science in Semiconductor Processing*, 119, 105249(1-11) (2020)
9. Banik S., Chattopadhyay M.K., Tripathi S.\*, Rawat R.\*, Jha S.N.\*  
Large positive magnetoresistance and Dzyaloshinskii–Moriya interaction in CrSi driven by Cr 3d localization  
*Scientific Reports*, 10, 12030(1-11) (2020)
10. Benarji K.\*, Kumar Y.R.\*, Jinoop A.N., Paul C.P., Bindra K.S.  
Effect of heat-treatment on the microstructure mechanical properties and corrosion behaviour of SS 316 structures built by laser directed energy deposition based additive  
*Metals and Materials International*, 26, 015001(1-8) (2020)
11. Bhaumik I., Soharab M., Bhatt R., Saxena A., Sah S.\*  
Influence of Al content on the optical band-gap enhancement and lattice structure of  $(\text{Ga}_{1-x}\text{Al}_x)_3\text{O}_3$  single crystal  
*Optical Materials*, 109, 110351 (2020)
12. Bhowmik R.N.\*, Kumar A.\*, Sinha A.K., Yusu S.M.\*  
Probing low temperature non-equilibrium magnetic state in  $\text{Co}_{2.75}\text{Fe}_{0.25}\text{O}_{4+\delta}$  spinel oxide using DC magnetization ac susceptibility and neutron diffraction experiments  
*Journal of Alloys and Compounds*, 849, 156614 (2020)
13. Bhowmik R.N.\*, Siva K.V.\*, Reddy V.R.\*, Sinha A.K.  
Tuning of structural phase magnetic spin order and electrical conductivity in mechanical alloyed material of  $\alpha\text{-Fe}_2\text{O}_3$  and  $\alpha\text{-Cr}_2\text{O}_3$  oxides  
*Journal of Magnetism and Magnetic Materials*, 514, 167173(1-16) (2020)
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Interfacial chemistry and electronic structure of epitaxial lattice-matched  $\text{TiN}/\text{Al}_{0.72}\text{Sc}_{0.28}\text{N}$  metal/semiconductor superlattices determined with soft x-ray scattering  
*Journal of Vacuum Science & Technology A*, 38, 053201(1-8) (2020)
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Compact and strong window core steering magnets with homogeneous dipole field  
*Pramana: Journal of Physics*, 94, 155 (2020)

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*Scientific Reports*, 10, 14718 (2020)
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Optimization of the growth of GaN epitaxial layers in an indigenously developed MOVPE system  
*Sadhana*, 45, 1-12 (2020)
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Comparative study of quality characteristics of Nd:YAG laser weldments in 316 stainless steel and Ti6Al4V  
*Lasers in Engineering*, 47, 133-159 (2020)
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Enhancing the diode characteristics of pulsed laser-deposited n-Mg<sub>x</sub>Zn<sub>1-x</sub>O/p-Si heterojunction: role of oxygen ambient pressure  
*Physica Status Solidi*, 217, 2000440 (2020)
21. ChinnaSami S. \*, Paulraj R. \*, Bhatt R., Bhaumik I., Ramasamy P. \*, Karnal A.K.  
Investigation on the growth rate crystalline perfection refractive index Z-scan and electrical characteristics of Z- cut imidazolium l-tartrate single crystal  
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Effect of xlenol orange on the crystalline perfection optical piezoelectric and NLO behavior of unidirectionally grown Imidazolium L-Tartrate single crystal  
*Chinese Journal of Physics*, 67, 135-146 (2020)
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Identification of modes of welding using parametric studies during ytterbium fiber laser welding  
*Journal of Manufacturing Processes*, 57, 748-761 (2020)
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Investigations on SHG properties of LiNbO<sub>3</sub>/PMMA nanocomposites  
*Applied Physics A*, 126, 611 (2020)
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Fatigue crack propagation behaviour of inconel 718 structures built using directed energy deposition based laser additive manufacturing  
*Materials Letters*, 276, 128241(1-5) (2020)
26. Dhamgaye V., Laundy D. \*, Baldock S. \*, Moxham T., Sawhney K. \*  
Correction of the x-ray wavefront from compound refractive lenses using 3D printed refractive structures  
*Journal of Synchrotron Radiation*, 27, 1518-1527 (2020)
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Numerical studies on tuning of a traveling wave bunching-cum-accelerating structure in simulation environment  
*Journal of Instrumentation*, 15, T12008 (2020)
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*Laser Physics*, 30, 085602 (1-12) (2020)
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*Computational Materials Science*, 183, 109802 (2020)
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*Physical Review Letters*, 125, 117002(1-7) (2020)
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Mechanistic insights into defect generation and tuning of optical properties in Zn<sub>1-x</sub>Fe<sub>x</sub>Al<sub>2</sub>O<sub>4</sub> (0.01 ≤ x ≤ 0.40) nanocrystals  
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*IEEE Transactions on Nuclear Science*, 67, 2303-2310 (2020)
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Spin reorientation transition and coupled spin-lattice dynamics of Sm<sub>0.6</sub>Dy<sub>0.4</sub>FeO<sub>3</sub>  
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*Applied Physics B*, 126, 123 (2020)
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Influence of heat input on welding induced distortion for Yb-fibre laser welded thin sheets  
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*Journal of Materials Science: Materials in Electronics*, 31 16379–16388 (2020)
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*Journal of Materials Engineering and Performance*, 29, 7636–7647 (2020)
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*Applied Surface Science*, 531, 147364 (2020)
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Growth and optical investigation of Nd co-doped Yb:YVO<sub>4</sub> crystal: a promising material for laser gain medium  
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94. Sundar R.\*, Sudha C.\*, Rai A.K., Ganesh P., Kolhatkar A.\*, Murugesan S.\*, Karthik K.\*, Biswal R., Raju S.\*, Ranganathan K., Kaul R., Bindra K.S.  
Effect of laser shock peening on the microstructure, tensile and heat transport properties of alloy D9  
*Lasers in Manufacturing and Material Processing*, 7, 259-277 (2020)
95. Thangswamy M.\*, Maheshwari P.\*, Dutta D.\*, Bera A.K.\*, Singh M.N., Sinha A.K., Yusuf S.M.\*, Pujari P.K.\*  
Evolution of confined ice nano structures at different levels of pore filling: a synchrotron based x-ray diffraction study  
*Physical Chemistry Chemical Physics*, 22, 14309-14317 (2020)
96. Tomar S.S., Rawat A., Vyavahare P.D.\*, Tokekar S.\*  
Conceptual model for comparison of IPv6 ISPs based on IPv4 traffic profiles  
*International Journal of Information Technology*, 12, 1171-1182 (2020)
97. Tripathi A., Singh A.\*, Rathi S., Upadhyay R., Badapanda M. K., Lad M.  
FPGA based control and protection unit of a multichannel pulsed power supply for solid state RF amplifiers  
*Journal on Electrical Engineering*, 13, 49-60 (2020)
98. Trivedi A., Choudhary R.J.\*, Das A., Rai S.K., Tiwari M.K., Sinha A.K.  
Surface-interface investigations of an ultrathin pulsed laser deposited NiO/ZnO bilayer structure  
*Surface Interface analysis*, 52, 533-540 (2020)
99. Varade P.\*, Pandey A.H.\*, Gupta S.M., Venkataramani N.\*, Kulkarni A.R.\*  
Emergence of reentrant relaxor behavior with enhanced electromechanical and electrocaloric effect in Ba<sub>0.95</sub>Ca<sub>0.05</sub>Sn<sub>0.09</sub>Ti<sub>0.91</sub>O<sub>3</sub> ceramic  
*Applied Physics Letters*, 117, 212901(1-6) (2020)
100. Varshney P.\*, Gopal K.\*, Upadhyay A.  
Terahertz emission from nonlinear interaction of laser beat wave with nanoparticles  
*Laser Physics Letters*, 17, 126002(1-7) (2020)
101. Verma R.\*, Mishra E., Dhang P.\*, Das B.K.\*, Meena M.\*, Rongali L.\*, Sharma A.\*  
Development and performance characterization of a compact plasma focus based portable fast neutron generator  
*Plasma Science and Technology*, 22, 1-9 (2020)
102. Waghvani B.B.\*, Ali S.S.\*, Anjankar S.C.\*, Balpande S.S.\*, Mondal P., Kalambe J.P.\*  
In vitro detection of water contaminants using microfluidic chip and luminescence sensing platform  
*Microfluidics and Nanofluidics*, 24, 1-12 (2020)
103. Yadav S.\*, Chandra M.\*, Rawat R.\*, Sathe V.\*, Sinha A.K., Singh K.\*  
Structural correlations in the enhancement of ferroelectric property of Sr doped BaTiO<sub>3</sub>  
*Journal of Physics: Condensed Matter*, 32, 1-9 (2020)

104. Yadav S., Paul C.P., Jinoop A.N., Rai A.K., Bindra K.S. Laser directed energy deposition based additive manufacturing of copper: process development and material characterizations  
*Journal of Manufacturing Processes*, 58, 984-997 (2020)
105. Yeshodamma S.\*, Hareesh K.\*, Nagabhushana H.\*, Dwivedi J., Petwal V.C., Sunitha D.V.\* Influence of electron beam irradiation on structural thermo and photoluminescence properties of SrTiO<sub>3</sub>:Sm<sup>3+</sup> nanophosphor  
*Optik*, 223, 165483 (2020)
106. Zhu H.\*, Kamal C. et al. Tuning the bandgap in silver bismuth iodide materials by partly substituting bismuth with antimony for improved solar cell performance  
*ACS Applied Energy Materials*, 3, 7372–7382 (2020)
3. Dhawan R., Yadav P.K. Influence of ion beam energy on surface roughness and density of In<sub>2</sub>O<sub>3</sub> thin films
4. Dutt R., Chakrabarti A. Ab-initio study of thermoelectric properties of Co<sub>2</sub>XGa (X = Mn, Mo, Pt)
5. Ghosh S., Ghosh Haranath As-L-edge absorption spectra of Ca<sub>1-x</sub>RE<sub>x</sub>FeAs<sub>2</sub> superconducting materials: a DFT study
6. Gupta R. K., Yadav P.K., Modi M.H. Analysis of polarization characteristics of soft x-ray beam at INDUS-1 reflectivity beamline
7. Kaiwart R.\*, Poswal H.K.\*, Das S. Calculation of flux for superconducting wavelength shifter based high energy x-ray diffraction beamline BL-15

## B. Invited Talks

1. Banerjee A. Lectures on linear algebra  
*TEQIP Short term course on Machine Learning and Artificial Intelligence*, IIT-Indore, Dec. 21, 2020
2. Borage M. Power converters for particle accelerators – challenges and opportunities  
*IEEE International Conference on Smart Technologies for Power, Energy and Control*, VNIT, Nagpur, Sept. 25-26, 2020
3. Nayak M. Manipulation of X-rays for science and technology  
*One day national Webinar*, Salipur Autonomous College, Odisha, Dec. 21, 2020
4. Nayak M. X-ray optics for frontier technological applications  
*Departmental colloquium*, ISRO Satellite Centre, ISRO, Bangalore, Nov. 23, 2020
8. Kar I\*, Harnagea L\*, Banik S., Singh S.\*, Thirupathaiah S.\* Observation of surface Dirac state in transition metal Dichalcogenide NiTe<sub>2</sub> using ARPES
9. Khan A.A., Ahlawat A., Deshmukh P., Srihari V., Karnal A.K., Satapathy S. Structural and magnetic studies of Er doped SmFeO<sub>3</sub>
10. Kaur P.\*, Khanna A.\*, Singh, M.N., Sinha A.K. Investigation of structural and optical characteristics of CaWO<sub>4</sub> and BaWO<sub>4</sub> nanoparticles
11. Khandelwal A., Sharath Chandra L.S., Sagdeo A., Chattopadhyay M. K. Enhancement of the thermo-electric figure of merit in vanadium substituted TiNiSn alloys
12. Kiranjot, Sinha M., Gupta R.K., Yadav P.K., Modi M.H. Soft X-ray photon energy calibration using multilayer mirror

## C. Seminar/Conference Presentations

### C.1. AIP Conference Proceeding Vol. 2265

1. Banik S., Tripathi S.\*, Jha S.N.\* Partial density of 3d electrons in CrSi probed by resonant photoemission
2. Changdar S.\*, Sultana R.\*, Banik S., Awana V.P.S.\*, Thirupathaiah S.\* Angle resolved photoemission spectroscopy study on electronic band structure of topological insulator Bi<sub>2</sub>Se<sub>3</sub> in the presence of magnetic impurities
13. Kumar Y.\*, Tripathi J.\*, Kumar D.\*, Gupta P., Tripathi S.\*, Sharma A.\* Structural and magnetic properties of CoO/Co thin films deposited onto self-assembled polystyrene nanospheres (600nm)
14. Mitra P.\*, Bhowmik R.N.\*, Choudhury R.J.\*, Sinha A.K. Effect of heat treatment on structural and magnetic properties of α-Fe<sub>1.8</sub>Ga<sub>0.2</sub>O<sub>3</sub> thin film
15. Majhi A., Nayak M., Tiwari M.K., Srivastava H., Srivastava A.K. Fabrication and characterization of low period W/B<sub>4</sub>C multilayer

16. Pandey D. Chakrabarti A.  
Two-dimensional monolayers of arsenides and silicides of Mo and W: a first principles study
17. Paul S., Ramjan S.K., Sharath Chandra L.S., Sagdeo A., Chattopadhyay M.K.  
Enhancement of critical temperature and upper critical field due to Nb substitution in Zr-V alloy superconductors
18. Rao P.N., Rai S.K., Ganguli T.  
Investigation of composition of boron carbide thin films grown on different substrates using resonant soft x-ray reflectivity
19. Saroha V., Sumit, Shukla R., Srivastava A.K., Sahu R.K.  
Shape control study of MEMS deformable mirror for adaptive optics in Indus-2 using piezo response function based TLBO algorithm
20. Sharath Chandra L.S., Chattopadhyay M.K.  
Magnetic and thermodynamic properties of  $\text{PrPt}_{3.88}\text{Fe}_{0.12}\text{Ge}_{12}$  superconductor
21. Soharab M., Bhaumik I., Bhatt R., Saxena A., Karnal A.K., Singh A.J., Sharma S.K., Mukherjee C., Rajiv K., Kamath M.P.  
Fabrication of “a-cut” laser element from in-house grown Nd doped  $\text{GdVO}_4$  crystals and demonstration of lasing
22. Srivastava H., Sonakusare P.\*, Tiwari P., Srivastava A.K.  
A simple non-lithography method to make a single nanowire based resistor device
23. Srivastava H., Tiwari P., Behar P.\*, Srivastava A.K.  
Growth of  $\text{MoS}_2$ -CuO hetero-structure nanowires
24. Trivedi A., Khooha A., Mondal P., Kane S.R., Tiwari M.K.  
Study of energy dependent behaviour of half-lens polycapillary optics using synchrotron x-rays
25. Tyagi M.\*, Sarkar P.S.\*, Sengar R.S.\*, Kumar A.\*, Jagannath\*, Karnewar A.K., Kumar A., Maurya N.K., Soni R.K., Kumar P., Pal M.K.\*, Singh A.K.\*, Ravisankar E.\*, Madhusoodanan K.\*, Puntambekar T.A., Dwivedi J., Gadkari S.C.\*  
Development of x-ray beam profile monitor based on in-house grown crystal and application in electron beam imaging
26. Vashisht G., Haldar S., Porwal S., Kumar R., Dixit V.K.  
Electric and magnetic field effects on the exciton localization in a modulation doped InGaAs/GaAs quantum well
27. Verma R.S., Yadav P.K., Joshi M.P.  
Development of soft x-ray excited optical luminescence (XEOL) measurement setup at beamline 4 in INDUS-1 synchrotron radiation source
28. Yadav P.K., Gupta R.K., Choubey A.K., Ali S., Modi M.H.  
Analysis of Au film surface after carbon layer removal with ultra violet radiation, RF plasma and IR laser

## C.2. Other Seminar/Conference Presentations

1. Mahantesha B.K.\*, Ravindrachary V.\*, Padmakumari R.\*, Sahanakumari R.\*, Sagar R.N.\*, Tegginamata P.\*, Sanjeev G.\*, Mishra A.S.  
Effect of electron irradiation on optical, thermal and electrical properties of  $\text{LiClO}_4/\text{PVA}$  polymer composite  
*AIP Conference Proceedings*, Vol. 2244 (2020)
2. Patil J., Tokekar V.\*, Rajan A., Rawat A.  
SMDMTS - Scalable Model to Detect and Mitigate slow/fast TCP-SYN flood attack in software defined network  
*International Conference on Computational Performance Evaluation (ComPE 2020)*, North-Eastern Hill University, Shillong, Meghalaya, India., Jul., 2-4, 2020

**Note: '\*' indicates author affiliation other than RRCAT Indore.**