

Faculty Name	Designation	Email ID (@rrcat.gov.in)	Field of Specialization	Current Research Topics	Recent Publications (10 latest)
Dr. Kushvinder Singh Bindra	Senior Professor	bindra			
Dr. S.K.Dixit	Professor	skdixit			
Dr. Arup Banerjee	Professor	banerjee			
Dr. Mukesh Joshi	Professor	mukesh			
Dr. J.A.Chakera	Professor	chakera			
Dr. Satya Ram Mishra	Professor	srm			
Dr. Aparna Chakrabarti	Professor	aparna	Density Functional Theory	Alloys, oxides and two-dimensional materials	(1) Electronic and transport properties of Heusler alloy based magnetic tunneling junctions: A first principles study; Computational Materials Science, 216, 111582 (2023); (2) Revealing superstructure ordering in $Co_{1+x}MnSb$ Heusler alloys and its effect on structural, magnetic, and electronic properties; Phys. Rev. B 105, 184106 (2022); (3) Investigation of structural, magnetic and electronic properties of $CoMnSb$ superstructure: A DFT study; Computational Materials Science, 210, 111441 (2022); (4) Investigation of Mechanical, Lattice dynamical, Electronic and Thermoelectric Properties of Half Heusler Chalcogenides: A DFT study; Journal of Physics and Chemistry of Solids, 167, 110704 (2022); (5) Signature of linear-in-k Dresselhaus splitting in the spin relaxation of X-valley electrons in indirect band gap AlGaAs; Physical Review B 104, 115202 (2021); (6) Surface Termination and Thickness Dependent Magnetic Coupling of Cr Adlayers on $Ni_2MnGa(001)$ Surfaces: An ab-initio Study; Journal of Magnetism and Magnetic Materials, 540, 168398 (2021); (7) Study of Adsorption of $H_2$ , CO and NO Gas Molecules on Molybdenum Sulfide and Tungsten Sulfide Monolayers from First-Principles Calculations; Surface Science, 714, 121910 (2021); (8) Ab Initio study of adsorption of fission gas atoms Xe and Kr on $MoS_2$ monolayer functionalized with 3d transition metals; Journal of Physical Chemistry C, 125(2), 1493 (2021); (9) Probing the martensite transition and thermoelectric properties of $CoxTaZ$ ( $Z = Si, Ge, Sn$ and $x = 1, 2$ ): a study based on density functional theory; Journal of Physics - Condensed Matter, 33(4), 045402 (2020); (10) High Performance Lithium-Ion Batteries Using Layered 2H-MoTe <sub>2</sub> as Anode; Small, 16(38), 2002669 (2020).
Dr. S.K.Majumder	Professor	shkm		Laser Biomedical Applications, Biophotonics	
Dr. Vinit Kumar	Professor	vinit	Accelerator and BeamPhysics	Beam dynamics in particle accelerators, Elelctomagnetic design of particle accelerators, Free electron lasers	1. "Numerical study on the impact of errors in a 325 MHz radiofrequency quadrupole and assessing the validity of quasistatic approximation in the analysis", <i>Pramana - J. Phys.</i> 96:126 (2022). 2. "Electromagnetic design of 325 MHz superconducting single-spoke resonators for Indian Facility for Spallation Research", <i>Pramana - J. Phys.</i> 96:69 (2022). 3. "Understanding energy propagation during reflection of an evanescent electromagnetic wave", <i>American Journal of Physics</i> , 89 (2021), 877. 4. "Numerical studies on RF tuning of an RFQ in a simulation environment using a tuning program", <i>Nuclear Instrum. and Phys. Res.</i> A991 (2021) 165021. 5. "Numerical studies on tuning of a traveling wave bunching-cum-accelerating structure in simulation environment", <i>JINST</i> 15 (2020) T12008. 6. "Beam optics studies and lattice design of the 1 GeV H- injector linac for ISNS", <i>Nuclear Instrum. and Phys. Res.</i> A942 (2019) 162299. 7. "Influence of material parameters on the performance of niobium based superconducting RF cavities", <i>Pramana - J. Phys.</i> , 93(2019) 51. 8. "First Lasing in an Infrared Free Electron Laser at RRCAT, Indore", <i>Current Science</i> 114 (2018) 367-373. 9. "Beam dynamics and electromagnetic studies of a 3 MeV, 325 MHz radio frequency quadrupole accelerator", <i>European Physical Journal N</i> , 4, 9 (2018) 1-17. 10. Electromagnetic response of a metal: A comparative analysis of the 'free charge model' and the 'bound charge model', <i>European Journal of Physics</i> 38 (2017) 71.

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Dr. Tapas Ganguli	Professor	tapas			
Dr. Tarun Kumar Sharma	Professor	tarun			
Dr. Om Prakash	Professor	oprakash			
Dr. Anand Moorti	Professor	moorti			
Dr. Mohammed Hussein Modi	Professor	modimh	X-ray thinfilm and multilayers;	Study on high heat tolerant materials for high brilliance synchrotron applications	
Dr. S.K.Rai	Professor	sanjayrai	30 years of experience in x-ray	Stress texture and Assessment of microstructure using x-ray diffraction for in-service degradation due to various operational condition for life extension of critical engineering components	
Dr B. N Upadhyay	Professor	bnand	CW and pulsed Nd:YAG laser,	Study on high power CW and pulsed Nd:YAG and fiber lasers; Laser material processing applications	1. "Study on the Microstructural Evolution and Mechanical Strength in Pulsed Laser Welding of Zr-2.5 wt.%Nb Alloy", Journal of Nuclear Materials, Vol. 564, Article 153685, June 2022. 2. "A mathematical model to study the keyhole formation in pulsed Nd:YAG laser welding of SS 316L material and its experimental verification", Accepted for publication in Journal of Laser Applications, June 2022. 3"Rejuvenation of Inside Surface of Intergranular Corrosion-Damaged Type 304 Stainless Steel Tube through Laser Surface Melting", Journal of Materials Engineering and Performance, 29, 1600 (2020). 4 "Comparative Study of Quality Characteristics of Weldments in Laser Fabrication of AISI 316 and Ti6Al4V using Fiber Nd:YAG Laser", Lasers in Engineering, 47, 133 (2020). 5. "Antibacterial and Corrosion Studies on Nanosecond Pulse Laser Textured 304 L Stainless Steel Surfaces", Lasers in Manufacturing and Materials Processing, 6, 332 (2019). 6. "Parametric appraisal of mechanical and metallurgical behavior of butt welded joints using pulsed Nd:YAG laser on thin sheets of AISI 316", Optics and Laser Technology 117, 186 (2019). 7. "Short pulse generation in active Q-switched Yb-doped all fibre laser and its amplification", Optics and Laser Technology 109, 186 (2019). 8. "Drilling of micro-holes on titanium alloy using pulsed Nd:YAG laser: Parametric appraisal and prediction of performance characteristics", Proc. Institution of Mechanical Engineers Part B: Journal of Engineering Manufacture, 233, 1872 (2018). 9. "Applications of High Power Solid State Lasers in Nuclear Power Programme", Proceedings of the National Academy of Sciences, India Section A: Physical Sciences, 88, 375 (2018). 10. "Narrow-linewidth broadly tunable Yb-doped Q-switched fiber laser using multimode interference filter", Applied Optics, Vol. 56, No. 13 pp. 3783-3788 ( 2017).
Dr. Manoranjan P. Singh	Associate Professor	mpsingh			
Dr. Arvind Kumar Srivastava	Associate Professor	sarvind			
Dr. P.K.Mukhopadhyay	Associate Professor	pkm			
Dr. Harnath Ghosh	Associate Professor	hng			
Dr. Surya Mohan Gupta	Associate Professor	surya			
Dr. Avnish K. Sharma	Associate Professor	aksharma			
Dr. Sunil Verma	Associate Professor	sverma			
Dr. Maulindu K. Chattopadhyay	Associate Professor	maulindu			

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Dr. C. Mukherjee	Associate Professor	cmukh	Fabrication and characterisation	High damage threshold oxide multilayer coatings and metal coatings on super smooth surfaces	<p>“Relative humidity measurement sensor based on polyvinyl alcohol coated tilted fiber Bragg grating”; Measurement Science &amp; Technology, 32, 125123, Oct. 2021. “Study of metal assisted chemical etching of silicon as an alternative to dry etching for the development of vertical combdrives”, Journal of Micromanufacturing, Aug. 2021. “WS2 Nanosheet/Si p-n Heterojunction Diodes for UV-Visible Broadband Photodetection”, ACS Appl. Nano Mater., 4, 3241–3251, Feb. 2021. “Challenges in fabrication of high aspect ratio electrostatic comb-drive microactuator using one-step x-ray lithography”, ISSS Journal of Micro and Smart Systems, 9, 173, Nov.2020. “Multilayer dielectric coated Fabry Perot spectral beam combiner for high power, narrowband, widely tunable laser applications”, Optics &amp; Laser Technology, 128, 106210, Aug. 2020. “Study of degradation behavior in Kapton foil after gamma irradiation at low fluence”, Radiation Effects and Defects in Solids, 175, 879, June 2020. “Dynamics of instability in plasmonic response of nanostructured gold thin films on ambient ageing”, Surfaces and Interfaces, 19, 100486, June 2020. “Si compatible MoO<sub>3</sub>/MoS<sub>2</sub> core-shell quantum dots for wavelength tunable photodetection in wide visible range”, Applied Surface Science, 502, 144196, Feb. 2020. “Simultaneous photo-reduction and Raman spectroscopy of red blood cells to investigate the effects of organophosphate exposure, J. Biophotonics, 12(5), May 2019. “Surface and interface properties of ZrO<sub>2</sub>/GaAs, SiO<sub>2</sub>/GaAs and GaP/GaAs hetero structures investigated by surface photovoltage spectroscopy”, Applied Surface Science, 476, 615-622, May 2019.</p>
Dr. Vibhuti Bhushan Tiwari	Professor	vbtiwari	Cold Atom Physics and Laser s	Cold atom based quantum sensors, Atom chip related research, Non linear Laser spectroscopy	<p>1. "Cooling of fermionic <sup>83</sup>Kr-bosonic <sup>84</sup>Kr isotopes in a magneto-optical trap Pramana - J. Phys., 93:92 (2019) 2. “On electromagnetically induced transparency in N-systems in cold <sup>87</sup>Rb atoms”, J. Phys. B: At. Mol. Opt. Phys., 53, 015001 (2020). 3. “On continuous loading of a U-magneto-optical trap (U-MOT) on atom-chip in ultra high vacuum” Laser Phys. Lett., 17, 035501 (2020). 4. “Absorption imaging of trapped atoms in presence of AC-Stark shift”, Phys. Scr. 96, 015405, (2021). 5. “Polarization enhanced tunable Doppler-free dichroic lock technique for laser frequency locking”, J. Opt. Soc. Am B, 38, 249, (2021). 6. "A single laser operated magneto-optical trap for Rb atomic fountain" Pramana - J. Phys., 95, 67, (2021). 7. “Different atom trapping geometries with time averaged adiabatic potentials” Eur. Phys. J. D, 75, 281, (2021). 8. “Efficient quantum state preparation using Stern–Gerlach effect on cold atoms”, Meas. Sci. Technol., 33, 095019, (2022). 9. “A method for loading magneto-optical trap in an ultrahigh vacuum environment”, AIP Advances, 13, 015108, (2023). 10. “Development and characterization of atom chip for magnetic trapping of atoms”, J. Appl. Phys., 133, 084402, (2023).</p>

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Dr. Indranil Bhaumik	Associate Professor	neel	Condensed Mater Physics; Materials science; Single crystal growth; Optical		1. "Effect of electrical poling on the structural, vibrational, and electrical properties of 0.94(Na0.5Bi0.5TiO3)-(0.06-x)CaTiO3-x(BaTiO3) lead-free ceramics" Ceramic International, (2023) doi.org/10.1016/j.ceramint.2023.01.018. 2. "Effect of electric field induced structural ordering on photo-luminescence and piezoelectric response of praseodymium doped (Na0.41K0.09Bi0.5)TiO3 ceramics" Journal of Applied Physics 132 (2022) 224104. 3. "Effect of Nb Substitution on the Electronic Property of Lead-free Piezoelectric (Na0.41K0.09Bi0.50)TiO3 Single Crystal: Optical Absorption and Photoelectron Study" Journal of Applied Physics 132 (2022) 205103. 4. "Refractive index and domain structure of undoped and Nb doped (Na0.41K0.09Bi0.50)TiO3 (NBT-KBT) single crystal grown at MPB composition" Optical Materials 133 (2022) 113021. 5. "A correlation of piezoelectricity and photoluminescence of europium doped (Na0.41K0.09Bi0.5)TiO3 with ferroelectric and structural ordering," Ceramics International 48 (2022) 3243. 6. Effect of Cr co-doping on the optical absorption and emission characteristics of Yb:YVO4 single crystals grown by OFZ technique, Optical Materials 128 (2022) 112434. 7. "Room temperature multiferroicity with enhanced ferroelectric and ferromagnetic properties in Ba0.75Pb0.25Ti1-xFexO3," J. Alloys and Compounds, 897 (2022) 162734. 8. "Defect Dipole Induced Improved Electrocaloric Effect in Modified NBT-6BT Lead-Free Ceramics" J. Alloys and Compounds, 903 (2022) 163837. 9. "Crystal Interface Control at Low Thermal Gradient and Investigation of the Effect of Cr on the Crystal Structure and Optical Properties of Bismuth Silicate" Phys. Status Solidi B, 258 (2021) 2100315. (This article also appears in: 60 years of pss) 10. "Unusual absorption and emission characteristics of Cr co-doped Nd:GdVO4 laser gain crystal", J. Alloys and Compounds 886 (2021) 161182.
Dr. Manoj Kumar Tiwari	Associate Professor	mktiwari			
Dr. Vijay Kumar Dixit	Associate Professor	dixit			
Dr. Raktim Dasgupta	Associate Professor	raktim			
Dr. Gurvinderjit Singh	Associate Professor	gjit			
Dr. Maheshwar Nayak	Associate Professor	mnayak			
Dr. (Ms.) Suparna Pal	Associate Professor	suparna			

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Dr. Satapathy S.	Associate Professor	srinu73			1. "Effect of nano-size on magnetostriction of BiFeO <sub>3</sub> and exceptional magnetoelectric coupling properties of BiFeO <sub>3</sub> _P (VDF-TrFE) polymer composite films for magnetic field sensor application" Smart Materials and Structures, Available online 13th March 2023 2. "Infrared to visible conversion in strontium sulphate through defect-based IR stimulated visible emission phenomenon" Luminescence, Available Online 9th Feb 2023 3. "Structural, optical and dielectric investigations on RECrO <sub>3</sub> . 85MnO <sub>3</sub> (RE= Ho, Gd and Pr) nanoparticles" Journal of Rare Earths, Available online 1st March 2023 4. "Correlation between spin-phonon coupling and magneto-electric effects in CoFe <sub>2</sub> O <sub>4</sub> /PMN-PT nanocomposite: Raman spectroscopy and XMCD study", Journal of Materials Science: Materials in Electronics, 33 (2022) 19766-19778. 5. "Improvement in white light emission of Dy <sup>3+</sup> doped CaMoO <sub>4</sub> via Zn <sup>2+</sup> co-doping" Methods and Applications in Fluorescence, 10, (2022) 044003. 6. "Effect of interface coupling between polarization and magnetization in La <sub>0.7</sub> Pb <sub>0.3</sub> MnO <sub>3</sub> (LPMO)/P(VDF-TrFE) flexible nanocomposite films" Journal of Materials Science, 57 (2022) 7621-7641. 7. " Strain assisted magnetoelectric coupling in ordered nano magnets of CoFe <sub>2</sub> O <sub>4</sub> /SrRuO <sub>3</sub> / (Pb(Mg <sub>1/3</sub> Nb <sub>2/3</sub> )O <sub>3</sub> -PbTiO <sub>3</sub> ), J. Phys.: Condens Matter, 34 (2022) 305801. 8. "Effect of Zn <sup>2+</sup> co-doping on the luminescence of Sm <sup>3+</sup> doped SrMoO <sub>4</sub> phosphor", J. of Luminescence, 248, (2022) 118994. 9. Greenish-yellow emission from rare-earth free Li <sup>+</sup> doped zinc vanadate phosphor, Results in Physics, 39, (2022) 105689. 10. "Angular dependent magnetoelectric effect of La <sub>0.7</sub> Ba <sub>0.3</sub> MnO <sub>3</sub> embedded P(VDF-TrFE) particulate multiferroic nano composite", Journal of Materials Science: Materials electronics, 33, (2022) 8534-8541. <a href="https://doi.org/10.1007/s10854-021-06440-1">doi.org/10.1007/s10854-021-06440-1</a> .
Dr. Pankaj Misra	Associate Professor	pmisra	Condensed matter physics, mat	Optical and transport properties of semiconductors, solar blind UV photodetectors, vibration energy harvesting and storage devices, gas sensors, resistive switching memory and synaptic devices	1. High output power density owing to enhanced charge transfer in ZnO-based triboelectric nanogenerator; 2. On origin of resistive and capacitive contributions to impedance of memory states in Cu/TiO <sub>2</sub> /Pt RRAM devices by impedance spectroscopy; Ceramics International 49 (2), 2215 (2023) 3. Blocking Si induced visible photoresponse in n-MgxZn <sub>1-x</sub> O/p-Si heterojunction UV photodetectors using MgO barrier layer; Phys. Status Solidi A 219, 2200285 (2022) 4. Oxygen annealing induced enhancement in output characteristics of ZnO based flexible piezoelectric nanogenerators; J. Alloys Compd 913, 165277-8 (2022) 5. Bandgap tunability and local structure of MgxZn <sub>1-x</sub> O (0 ≤ x ≤ 1) thin films grown by RF magnetron co-sputtering; Appl. Phys. A 128 (8), 1-12 (2022) 6. Maxwell-Wagner relaxation-driven high dielectric constant in Al <sub>2</sub> O <sub>3</sub> /TiO <sub>2</sub> nanolaminates grown by pulsed laser deposition; ACS Appl. Mater. Interfaces 14 (10), 12873–12882 (2022) 7. Observation of disorder induced weak localization in Gd: ZnO thin films; Physica B: Condensed Matter 619, 413218 (2021) 8. Enhancing diode characteristics of pulsed laser deposited n-MgxZn <sub>1-x</sub> O/p-Si heterojunction: Role of Oxygen ambient pressure; Phys. Status Solidi A 217, 2000440 (2020) 9. Low power high speed 3-bit multilevel resistive switching in TiO <sub>2</sub> thin film using oxidisable electrode; J. Phys. D: Appl Phys 53 (22), 22530 (2020) 10. A model for surface space charge mediated ultraviolet photoresponse in MgZnO thin films and its experimental verification; ACS Appl. Electron. Mater. 2 (3), 651-658 (2020)
Dr. Rajeev Bhatt	Associate Professor	rbhatt			Journal of Physics and Chemistry of Solids, 167, 110704 (2022).

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Dr. Shreyashkar Dev Singh	Associate Professor	devsh	Epitaxy, X-ray Diffraction, Opt	Ultra Wide Bandgap Oxide Semiconductors like Ga <sub>2</sub> O <sub>3</sub> , (Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> , p-type transparent conducting oxides like NiO	1. "Observation of mixed-mode behaviour of Raman active phonon modes for $\beta$ -(Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> alloys", Appl. Phys. Lett. 122, 112101 (2023). 2. "Determination of Al occupancy and local structure for $\beta$ -(Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> alloys across nearly full composition range from Rietveld analysis", Appl. Phys. Lett. 120, 262101 (2022). 3. "Temperature dependence of red luminescence in pure $\beta$ -Ga <sub>2</sub> O <sub>3</sub> : an estimation of electron-phonon interaction", Solid State Communications 352, 114831 (2022). 4. "Electronic structure modification in Fe substituted $\beta$ -Ga <sub>2</sub> O <sub>3</sub> from resonant photoemission and soft x-ray absorption spectroscopies", J. Phys. D: Appl. Phys. 55, 185304 (2021). 5. "Evaluation of valence band offset and its non-commutativity at all oxide $\alpha$ -Cr <sub>2</sub> O <sub>3</sub> / $\beta$ -Ga <sub>2</sub> O <sub>3</sub> heterojunction from photoelectron spectroscopy", J. Appl. Phys. 130, 175303 (2021). 6. "Bandgap bowing parameter and alloy fluctuations for $\beta$ -(Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> alloys for $x \leq 0.35$ determined from low temperature optical reflectivity", AIP Advances 11, 075025 (2021). 7. "Structural, optical and electronic properties of Ni <sub>1-x</sub> CoxO in the complete composition range", RSC Adv. 10, 43497 (2020). 8. "Investigations on epitaxy and lattice distortion of sputter deposited $\beta$ -Ga <sub>2</sub> O <sub>3</sub> layers on GaN templates", Semicond. Sci. Technol. 35, 085024 (2020). 9. "Investigations on band commutativity at all oxide p-type NiO/n-type $\beta$ -Ga <sub>2</sub> O <sub>3</sub> heterojunction using photoelectron spectroscopy", Appl. Phys. Lett. 115, 251603 (2019). 10. "Epitaxial growth and interface band alignment studies of all oxide $\alpha$ -Cr <sub>2</sub> O <sub>3</sub> / $\beta$ -Ga <sub>2</sub> O <sub>3</sub> p-n heterojunction Appl. Phys. Lett. 115, 061602 (2019).
Dr. Yogesh Verma	Associate Professor	yogesh			2021
Dr. Himanshu Singhal	Assistant Professor	himanshu	Laser Plasma interaction, Time	Time resolved x ray diffraction, High order harmonic generation from gases, attosecond pulse generation,	----
Dr. Vishnu Kumar Sharma	Assistant Professor	vishnusharma			
Dr Ramakant Biswal	Associate Professor	rbiswal			
Dr Ajit Upadhyay	Associate Professor	ajitup	Laser - Plasma Interaction, The	Laser - Plasma Interaction, Theoretical modelling of Laser-Plasma Interaction, Hydrodynamic and Particle-in-cell Simulation of long pulse and ultra-short pulse Laser-Plasma Interaction, Electron/Ion Acceleration from Plasma.	1. Addressing key aspects of J×B driven MeV fast electron generation in ultra-short ultraintense laser foil interaction, Phys. Plasmas 30, 023106 (2023); 2. Terahertz radiation from semiconductor plasmas using extraordinary mode of lasers, Optik (2023) 3. Electron beam acceleration using Colliding pulses injection in parabolic plasma channel, Optik - International Journal for Light and Electron Optics 265 (2022) 169402 4. Effect of laser intensity redistribution on semiconductor plasma based THz emission, Optik - International Journal for Light and Electron Optics 250 (2022) 168353. 5. Terahertz emission from nonlinear interaction of laser beat wave with nanoparticles, Laser Phys. Lett. 17 (2020) 126002. 6. Experimental study of fast electron generation from intense laser irradiated mylar foil with thin metal coating on front or rear surfaces, Phys. Plasmas 26, 013103 (2019) 7. Direct laser acceleration of electrons in a high-Z gas target and the effect of threshold plasma density on electron beam generation, Plasma Phys. Control. Fusion 61, 125016, (2019). 8. Experimental study of fast electron generation in intense short duration laser solid interaction at grazing incidence, Phys. Plasmas 26, 043105, 2019. 9. Experimental study of fast electron generation from intense laser irradiated mylar foil with thin metal coating on front or rear surfaces, Phys. Plasmas 26, 013103, 2019. 10. Strong terahertz radiation generation by cosh-Gaussian laser beams in axially magnetized collisional plasma under non-relativistic ponderomotive regime, Laser & Particle Beams, Volume 36, Issue 2, pp. 236-245, June 2018.
Dr. Uday Chakravarty	Assistant Professor	uday			
Dr. Manoj Kumar Singh	Assistant Professor	mk Singh			

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Dr. Soma Banik	Assistant Professor	soma	Electronic structure studies using	Electronic structure investigation for understanding the magnetic and transport properties in: 1) 2D magnetic and topological materials. 2) Chiral magnetic systems for novel spintronics. 3) Rare-earth intermetallic alloys for antiferromagnetic spintronics 4) Transition metal based intermetallic alloys as thermoelectric materials	1) Multiple Magnetic Phases and Anomalous Hall Effect in, Sb <sub>1.9</sub> Fe <sub>0.1</sub> Te <sub>2.85</sub> S <sub>0.15</sub> Topological Insulators. J. Phys. Chem. C 127, 2508–2517 (2023). 2) Nonmagnetic Sn doping effect on the electronic and magnetic properties of antiferromagnetic topological insulator MnBi <sub>2</sub> Te <sub>4</sub> Physica B 657, 414799 (2023). 3) Theoretical and experimental investigations on Mn doped Bi <sub>2</sub> Se <sub>3</sub> topological insulator. Physical Review Materials 6, 114201 (2022). 4) Spin reorientation transition driven by polaronic states in Nd <sub>2</sub> CuO <sub>4</sub> . Materials Advances 3, 7559 (2022). 5) Probing interband and intraband transitions in magneto-optical FeT (T= Cr, Co, Ni) alloys from electronic structure studies. Applied Surface Science 546, 148896 (2021). 6) Nitrogen-Ion Implantation Induced Bandgap Tailoring in Multifunctional Brownmillerite KBiFe <sub>2</sub> O <sub>5</sub> ECS Journal of Solid State Science and Technology 10, 061010 (2021). 7) Large positive magnetoresistance and Dzyaloshinskii–Moriya interaction in CrSi driven by Cr 3 d localization Scientific Reports 10, 12030 (2020). 8) Nitrogen Incorporated Photoactive Brownmillerite Ca <sub>2</sub> Fe <sub>2</sub> O <sub>5</sub> for Energy and Environmental Applications Scientific reports 10, 2713 (2020). 9) Direct hybridization gap from intersite and onsite electronic interactions in CeAg <sub>2</sub> Ge <sub>2</sub> RSC Advances 10, 24343 (2020). 10) Investigation of electronic structure of transition metal silicides MnSi <sub>1.75</sub> and CoSi for enhanced thermoelectric properties. Solid State Communications 307, 113807 (2020).
Dr. Chandra Pal Singh	Assistant Professor	cpsingh			
Dr. (Smt. ) Archana Sagdeo	Assistant Professor	archnaj			Pandey, D., Gangwar, R., Bhattacharya, J., and Chakrabarti, A.
Dr. Pooja Gupta	Assistant Professor	pooja	Structure-property correlation,	Structure-property correlation in amorphous and softmagnetic alloys, thin films and their applications, surface, interface and thin film magnetism	1. Interface-resolved study of magnetism in MgO/FeCoB/MgO trilayers using x-ray standing wave techniques Phys. Rev. B 107, 075416, 2023 2. Interfacial interaction driven enhancement in the colossal magnetoresistance property of ultra-thin heterostructure of Pr <sub>0.6</sub> Sr <sub>0.4</sub> MnO <sub>3</sub> in proximity with Pr <sub>0.5</sub> Ca <sub>0.5</sub> MnO <sub>3</sub> , Scientific Reports 13 (1), 2315, 2023 3. Study of oxidation behaviour of Ruthenium thin film after thermal annealing in oxygen environment, Thin Solid Films 764, 139606, 2023 4. Thickness-dependent structural and magnetic properties of Fe <sub>4</sub> N thin films Seema, Journal of magnetism and magnetic materials 563, 169999, 2022 5. Oblique angle deposited FeCo multilayered nanocolumnar structure: Magnetic anisotropy and its thermal stability in polycrystalline thin films, Applied Surface Science 590, 153056, 2022 6. Structural and magnetic asymmetry at the interfaces of MgO/FeCoB/MgO trilayer: Precise study under x-ray standing wave conditions, Journal of Applied Physics 131 (23), 235301, 2022 7. Effect of substrate and Fe/Rh stoichiometry on first order antiferromagnetic–ferromagnetic transition in FeRh thin films, Journal of Magnetism and Magnetic Materials 551, 169095, 2022 8. Role of Nb content in tailoring the microstructure and magnetic anisotropy of soft magnetic W/CoFeB alloy thin films prepared with varying the substrate temperature, Journal of Alloys and Compounds 910, 164930, 2022 9. BL-02: a versatile X-ray scattering and diffraction beamline for engineering applications at Indus-2 synchrotron source, Journal of Synchrotron Radiation 28 (4), 1193-1201, 2021 10. Line profile analysis of synchrotron X-ray diffraction data of iron powder with bimodal microstructural profile parameters Journal of Applied Crystallography 54 (2), 498-512, 2021

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Dr. Sanyasi Rao Bobbili	Assistant Professor	sunnyb	Laser Wakefield Acceleration	Controlled Electron Injection for Producing Tuneable Electron Beams of 100s of MeV to GeV energy, Improving the Energy and Quality and Transport of Electron Beams Generated from Laser Wakefield Acceleration, Explore Application of Laser Wakefield Accelerator as Table-top Sources of keV - MeV X-rays ....	
Dr. C. Kamal	Assistant Professor	ckamal	Computational Material Science	Graphene-like and Phosphorene-like two-dimensional (2D) materials and their hybrid / heterostructures; Technologically important bulk materials (Transition metal oxides, Intermetallics and alloys) and Nano-materials (nanoclusters and nanotubes) ; Electronic structures as well as nuclear and electron dynamics in energy materials, in particular Organic-Inorganic Hybrid Perovskites; Computational modeling of Core-level X-ray Spectroscopy for materials.	
Dr. Shankar Lal	Assistant Professor	shankar	Design and development of RF	Design of RF accelerators for IR and THz FEL.	
Dr. L.S.Sharath Chandra	Assistant Professor	lsschandra	Superconductivity, Strongly co	Superconducting properties of refractory metals, Correlation between magnetism and superconductivity, Electronic topological transitions, Magnetic Semiconductors	
Dr. Salahuddin Khan	Assistant Professor	skhan			
Dr. S.K.Rai	Professor	sanjayrai	30 years of experience in x-ray	Stress texture and Assessment of microstructure using x-ray diffraction for in-service degradation due to various operational condition for life extension of critical engineering components	
Dr. Shailesh Kumar Khamari	Assistant Professor	shaileshk			
Dr. Arun Kumar Rai	Assistant Professor	akrai	Laser Materials Processing, las	Study of phase transformation and phase stability and mechanical properties of laser based additive manufactured Ni and Fe based materials relevant to different engineering application Study on effect of laser shock peening on corrosion and mechanical properties of metals and alloys	
Dr Ravindra Jangir	Assistant Professor	ravindrajangir			
Faculty Name	Designation	Email ID (@rrc	Field of Specialization	Current Research Topics	Recent Publications (10 latest)



Faculty Name	Designation	Email ID (@rrcat.gov.in)	Field of Specialization	Current Research Topics	Recent Publications (10 latest)
Dr. C. P. Paul	Associate Professor	paulcp	Laser Additive Manufacturing;	LAM of Smart Structures; Microstructural Modeling; LAM of Ni-based, Ti-based, and Fe alloys; Advanced LAM systems	<p>1. Elucidating laser directed energy deposition based additive manufacturing of copper-stainless steel functionally graded material: Processing and material behaviour, Journal of Manufacturing Processes 92, 107-123, (2023). 2. (2022). On the hot isostatic pressing of Inconel 625 structures built using laser powder bed fusion at higher layer thickness. The International Journal of Advanced Manufacturing Technology, 120(5-6), 4065-4078. 3. (2022). Laser Directed Energy Deposition of High-Carbon High-Chromium D2 Tool Steel Structures: Processing, Heat Treatment and Material Behaviour. Journal of Materials Engineering and Performance, 1-11. 4. (2022). On the hot isostatic pressing of Inconel 625 structures built using laser powder bed fusion at higher layer thickness. The International Journal of Advanced Manufacturing Technology, 120(5-6), 4065-4078. 5. (2021). Microstructure and mechanical properties of NiTi-SS bimetallic structures built using Wire Arc Additive Manufacturing. Materials Letters, 303, 130499. 6. (2021). Study of microstructure and wear properties of laser borided Inconel 718. Journal of Materials Processing Technology, 298, 117298. 7. (2021). Faster temperature prediction in the powder bed fusion process through the development of a surrogate model. Optics &amp; Laser Technology, 141, 107122. 8. (2021). Laser-based metal additive manufacturing: technology, global scenario and our experiences. Transactions of the Indian National Academy of Engineering, 1-14. 9. (2020). Laser directed energy deposition based additive manufacturing of copper: process development and material characterizations. Journal of Manufacturing Processes, 58, 984-997. 10. (2020). Experimental investigation on laser directed energy deposition of functionally graded layers of Ni-Cr-B-Si and SS316L. Optics &amp; Laser Technology, 121, 105787.</p>

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Dr. Rahul Shukla	Assistant Professor	rahulshukla	Smart Materials and Structures	Currently emphasis is given on the design, optimization and development of: Piezoelectric X-ray Deformable Mirrors, MEMS for Adaptive Optics (comb-drives and micromotors) & Smart Structures (Accelerometers) and Piezo Stages. Microfabrication of novel structures and mechanisms using UV Lithography, LIGA and other techniques is also of great interest.	1. Development and characterization of atom chip for magnetic trapping of atoms, Journal of Applied Physics 133, 084402 (2023) <a href="https://doi.org/10.1063/5.0130749">https://doi.org/10.1063/5.0130749</a> 2. Measurements for static shape control optimization of silicon mirror using nonlinear piezoceramic actuators, Smart Material and Structures 32, 035035 (2023) <a href="https://doi.org/10.1088/1361-665X/acb86d">https://doi.org/10.1088/1361-665X/acb86d</a> 3. Iterative piezo response function-based optimization for static shape control of cantilever beam using nonlinear piezoactuators, Smart Material and Structures 32 (1), 015005 (2023) <a href="https://doi.org/10.1088/1361-665X/aca4ae">https://doi.org/10.1088/1361-665X/aca4ae</a> 4. Computational analysis of vertical comb-drive microactuator with extended mirror for manipulation of light, Journal of Vacuum Science and Technology B, 40 (6), 063001 (2022) <a href="https://doi.org/10.1116/6.0002190">https://doi.org/10.1116/6.0002190</a> 5. Electric field-induced nonlinear behaviour of lead zirconate titanate piezoceramic actuators in bending mode, Mechanics of Advanced Materials and Structures (Online: 7th April 2022) <a href="https://doi.org/10.1080/15376494.2022.2050966">https://doi.org/10.1080/15376494.2022.2050966</a> 6. Study of PID controller gain for active vibration control using FEM based particle swarm optimization in COMSOL Multiphysics, Journal of Micromanufacturing (Online:21 April 2022) DOI: 10.1177/25165984221086439 7. Design Analysis and Fabrication of Side-Drive Electrostatic Micromotor by UV-SLIGA, Journal of Micromanufacturing, 5 (2), 207 – 216 (2022) DOI: 10.1177/25165984211045201 8. Study of Metal assisted Chemical Etching of Silicon as an Alternative to Dry Etching for the Development of Vertical Comb-drives, Journal of Micromanufacturing, (Online: 6th August 2021) DOI: 10.1177/25165984211033422 9. Finite Element Method Coupled with TLBO for Shape Control Optimization of Piezoelectric bimorph in COMSOL Multiphysics, Simulation: Transaction of the Society for Modeling and Simulation International 97(9), 635 – 644 (2021) <a href="https://doi.org/10.1177/00375497211025640">https://doi.org/10.1177/00375497211025640</a> 10. Challenges in Fabrication of High Aspect Ratio Electrostatic Comb-drive Microactuator using One-Step X-ray Lithography, ISSS Journal of Micro and Smart Systems 9 (2), 173 – 180 (2020) DOI: <a href="https://doi.org/10.1007/s41683-020-00064-z">https://doi.org/10.1007/s41683-020-00064-z</a>
Dr. Prabhat Kumar Gupta	Associate Professor	prabhat	Cryogenic Engineering, Heat T	2 Kelvin Refrigeration Systems, Cryogenic Heat Exchangers, Helium Purification Systems, Helium Liquefaction Cycles	

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Dr Vikas Kumar Jain	Associate Professor	vikas	Superconducting RF cavity, Ad	LFD, Microphonics, Plasma processing, Conduction cooled superconducting cavity, NB3Sn cavity, Higher Order Modes	<p>1)Sushil K. Sharma, Honey Gupta, Vikas K. Jain*, P. Ganesh, Ram K. Gupta, Digamber P. Yadav, and Rakesh Kaul "Investigation of UHV Compatible Weld Joints of AA5083 and AA6061 materials for Synchrotron Radiation Source", Journal of Materials Engineering and Performance, Available online from 4 January 2022, <a href="https://doi.org/10.1007/s11665-022-06589-8">https://doi.org/10.1007/s11665-022-06589-8</a> (*corresponding Author)</p> <p>2)K. K. Singh, V. K. Jain*, D. V. Ghodke, A. Puntambekar, "A novel method for Lorentz force detuning compensation in multi-cell superconducting RF cavity and its validation at room temperature", Review of Scientific Instruments, 92(6), 063303, 2021, <a href="https://doi.org/10.1063/5.0046548">https://doi.org/10.1063/5.0046548</a> (*corresponding Author)</p> <p>3)Mayur Rathore, Vikas Kumar Jain*, Kuldeep Kumar Singh, Avinash Puntambekar, Ashok Atulkar, Rajkumar Porwal, "Estimation of Lorentz force detuning and its compensation on 650 MHz <math>\beta_g = 0.92</math> single cell SCRF cavity", IOP Journal Engineering Research Express, Volume 3, Number 2, Available online from 13th May 2021, <a href="https://doi.org/10.1088/2631-8695/abfd7">https://doi.org/10.1088/2631-8695/abfd7</a>, Publisher:- IOP science. (*corresponding Author)</p> <p>4)Mayur Rathore , Vikas Kumar Jain*, Ashok Atulkar, Kuldeep Kumar Singh , Rajkumar Porwal, "Study of Lorentz force detuning and its compensation in superconducting radiofrequency cavity: A review", Materials Today Proceeding, Article in press, Available online from 29th Dec 2020, ISSN 2214-7853, <a href="https://doi.org/10.1016/j.matpr.2020.11.506">https://doi.org/10.1016/j.matpr.2020.11.506</a> , Publisher:- Elsevier (*corresponding Author)</p> <p>5)Vandna K.Gupta, Alka A.Ingale, V. Jain, R.Aggarwal, S.Pal, "Predicting surface modification of InAs nanowires on laser irradiation using transient thermal simulation and time evolution of Raman spectra", Journal of Alloys and Compounds, Volume 735, 25 February 2018, pp 1331-1338. Publisher:- ScinceDirect</p> <p>6)S C Joshi, S Raghavendra, V. Jain, A Puntambekar, P Khare, J Dwivedi, G Mundra, P K Kush, P Shrivastava, M Lad and P D Gupta, "Development of Infrastructure Facilities for Superconducting RF Cavity Fabrication, Processing and 2 K Characterization at RRCAT", IOP Series: Materials Science and Engineering 171 (2017) 012114, doi:10.1088/1757-899X/171/1/012114. Publisher:- IOP Publishing</p> <p>7)Rahul Shukla, V. P. Dhamgave, V. Jain, P. Ram Sankar, C. Mukherjee, B. D. Pant, G. S.</p>

Faculty Name	Designation	Email ID (@rrcat.gov.in)	Field of Specialization	Current Research Topics	Recent Publications (10 latest)
Dr. Alok Dube	Professor	okdube	Anticancer and antimicrobial a	Synthesis and evaluation of NIR absorbing chlorophyll derivatives for photodynamic treatment of drug sensitive and drug resistant cancer ; Evaluation of antibacterial efficacy of photodynamic treatment using photosensitizer antibiotic combination	<ol style="list-style-type: none"> <li>1. Parihar A, Dube A. Structural alterations in cell organelles induced by photodynamic treatment with chlorin p6-histamine conjugate in human oral carcinoma cells probed by 3D fluorescence microscopy. Luminescence. Jun 13 (2022). doi: 10.1002/bio.4307.</li> <li>2. Sharma M, Dube A, Majumder SK. Antibacterial photodynamic activity of photosensitizer embedded alginate-pectin-carboxymethyl cellulose composite biopolymer films. Lasers Med Sci. (2021) 36:763-772. Doi: 10.1007/s10103-020-03083-2.</li> <li>3. Shrivastava R, Dube A. Effect of the polyelectrolyte coating on the photothermal efficiency of gold nanorods and the photothermal induced cancer cell damage. IET Nanobiotechnol. (2017) 11:909-916. doi: 10.1049/iet-nbt.2016.0132.</li> <li>4. Sarbadhikary P, Dube A. Iodinated chlorin p&lt;sub&gt;6&lt;/sub&gt; copper complex induces anti proliferative effect in oral cancer cells through elevation of intracellular reactive oxygen species. Chem Biol Interact (2017) 277:137-144. doi: 10.1016/j.cbi.2017.09.011.</li> <li>5. Sarbadhikary P, Dube A. Enhancement of radiosensitivity of oral carcinoma cells by iodinated chlorin p6 copper complex in combination with synchrotron X-ray radiation. J Synchrotron Radiat. (2017) 24:1265-1275. doi: 10.1107/S1600577517012711.</li> <li>6. Sarbadhikary P, Dube A, Gupta PK. Synthesis and characterization of photodynamic activity of an iodinated Chlorin p6 copper complex. Rsc Advances (2016) 6: 75782-75792. doi: 10.1039/c6ra14026b</li> <li>7. Sahu K, Sharma M, Dube A, Gupta PK. Topical antimicrobial photodynamic therapy improves angiogenesis in wounds of diabetic mice. Lasers Med Sci. (2015) 30:1923-9. doi: 10.1007/s10103-015-1784-8.</li> <li>8. Sahu K, Sharma M, Sharma P, Verma Y, Rao KD, Bansal H, Dube A, Gupta PK. Effect of poly-L-lysine-chlorin P6-mediated antimicrobial photodynamic treatment on collagen restoration in bacteria-infected wounds. Photomed Laser Surg. (2014) 32:23-29. doi: 10.1089/pho.2013.3577.</li> <li>9. Parihar A, Dube A, Gupta PK. Photodynamic treatment of oral squamous cell carcinoma in hamster cheek pouch model using chlorin p6-histamine conjugate. Photodiagnosis Photodyn Ther. (2013) 10:79-86. doi: 10.1016/j.pdpdt.2012.05.005.</li> <li>10. Sahu K, Sharma M, Bansal H, Dube A, Gupta PK. Topical photodynamic treatment with poly-L-lysine-chlorin p6 conjugate improves wound healing by reducing hyperinflammatory response.</li> </ol>