

# Sudhish Kumar

Head of Department (Physics)

**Designation** Professor  
**Academic degree** M.Sc Ph.D  
**Date of Birth** May 15, 1966  
**Place of Birth** Sikar (Raj.)  
**Nationality** Indian  
**Address** Department of Physics  
University College of Science  
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## Academic Qualifications

Degree	University	Subject	Division	Year of Passing
B. Sc.	M. L. Sukhadia University, Udaipur	Physics Chemistry Mathematics	I	1988
M. Sc.	M. L. Sukhadia University, Udaipur	Physics	I (First Rank in the MLSU, Udaipur)	1990
NET	CSIR-UGC, New Delhi	Physical Sciences	Selected for Lecturership	Dec. 1990
NET	CSIR-UGC, New Delhi	Physical Sciences	Selected for JRF (UGC)	Dec. 1991
Ph. D.*	University of Rajasthan, Jaipur	<b>Thesis Title</b> <i>"Study of magnetic Structure of some 3d metal based alloys".</i> (Supervisor: Professor Bipin K. Srivastava, Co-Supervisor: Dr. S.K. Paranjpe (SSPD, BARC, Mumbai))		2001

\*Ph.D Thesis work was carried out at the University of Rajasthan, Jaipur and Dhruva reactor, SSPD, BARC, Mumbai as a Research Scholar in an IUC-DAEF funded project. I had delivered a talk on my Ph.D. Thesis work in the Thesis oral presentation session of the 43<sup>rd</sup> DAE Solid State Physics Symposium held at Bilaspur during Dec. 27 to Dec. 31, 2000.

## Teaching Experience: 26 years

Post held	Institution	From	To
Head Department of Physics	Mohanlal Sukhadia University, Udaipur	Oct. 18, 2022	Till date
Professor of Physics	Mohanlal Sukhadia University, Udaipur	Sep. 30, 2014	Till date
Associate Professor of Physics	Mohanlal Sukhadia University, Udaipur	April 28, 2011	Sep. 29, 2014
Assistant Professor of Physics	Mohanlal Sukhadia University, Udaipur	July 31, 1997	April 27, 2011

## Membership of Professional Societies

- Life member of Indian Neutron Scattering Society
- Life member of Indian Society for radiation Physics.

## Membership of Academic Bodies

- Member, Committee of Courses in Electronics and Computer Science, M.C.A. B.E., BCA, Mohanlal Sukhadia University, Udaipur.
- Member, Admission Committee, Discipline Committee, COSFEST Organizing Committee, University College of Science, Maharana Bhupal Campus, Sukhadia University, Udaipur.

## Research Experience & Training

- 28 Years in the field of **Experimental Magnetism and Magnetic Materials**
- Total No. of Publications: **80**
- Total Citation: **~2300**
- H-index: **29**

Research Stage	Title of work/ Thesis	University where the work was carried out
Ph. D. 1991 - 2001	Study of magnetic structure of some 3d metal based alloys.	University of Rajasthan, Jaipur and Dhruva reactor, SSPD, BARC, Mumbai
Post -doctoral	Not Applicable	
Publications	In Journals =123	1. MLS University, Udaipur 2. University of Rajasthan, Jaipur 3. SSPD, BARC, Mumbai
Research Guidance	At present eight students are working for their Ph.D. Degree under my supervision	Research Guidance
Training	1.Fabrication techniques of ampoules and vacuum sealing for R& D work. 2. Computational Techniques in Neutron Scattering	University of Rajasthan, Jaipur IUC-DAEF, Indore

## Completed Research Project

Title of the Project	Name of the Funding Agency	Duration	Remarks
Investigation of structural and magnetic properties of some mixed valence manganates	UGC, New Delhi Major Research Project (12.3 Lacs)	3.5Years	July 1, 2012 to Dec.31, 2015

## **Reviewer for the Research Journals**

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1. Journal of Physics: Cond. Matter
2. Journal of Physics D: Applied Physics
3. Physica Scripta
4. Journal of Alloys and Compounds
5. Materials Letters
6. Materials Chemistry and Physics
7. Indian Journal of Pure and Applied Physics
8. Pramana\_Journal of Physics
9. about 10 more Journals published by Elsevier, Springer etc.

## **Research Interests**

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1. Synthesis and Characterization of Alloys, compounds and Minerals
2. Preparation and characterization of nano- particles of spinel ferrites, ferro-fluids, dilute semiconductors and Perovskites comprising these particles
3. Crystal Structure determination of alloys and compounds using X-Ray powder and Neutron diffraction and Rietveld refinement technique.
4. Investigation magnetic structures of bulk and nanomaterials using Neutron Powder Diffraction.
5. Systematic examination of low temperature evolution of magnetism in nanomaterials using SQUID magnetometry and Mössbauer spectroscopy.
6. Study of disordered magnetism in nanoparticles using ac-susceptibility analysis and probing paradigmatic signatures of spin glasses/cluster spin glasses/ superspin glasses/ surface spin glasses using relaxation, ageing, and memory and rejuvenation effect.
7. Study of defect induced magnetism by introducing vacancies via cationic substitutions in dilute semiconductors.
8. Study of optical, electrical and magnetic behaviors of dilute Semiconductors
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## **Methodology**

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1. Powder X-Ray Diffraction
2. Powder Neutron Diffraction
3. Magnetization measurements on SQUID and VSM
4. ac-Susceptibility and Magnetoresistance
5. Mössbauer Spectroscopy
6. UV-Vis, FTIR, Raman, STM, SEM and, SAED, EDS/EDX, TEM

## **International Schools and Refresher Course attended**

### **International:**

1. Euro Summer School 2002 on “New materials and their Dynamics- Advances through Synchrotron Radiation” held at Rostock - Warnemunde, Germany from Sep.29<sup>th</sup> to Oct. 11<sup>th</sup>, 2002.
2. Summer School on Condensed Matter Research – “Magnetism” from Aug. 10-17,2002 at Zuoz, Switzerland.

### **National:**

1. XIII Workshop on “Neutrons as Probes of Condensed Matter”, organized by UGC-DAE Consortium for Scientific Research, Mumbai Centre and SSPD, Bhabha Atomic Research Centre, Mumbai, during Jan. 12 to Jan 14, 2008.
2. Awareness Workshop on ‘Low Temperature and High Magnetic Field Facilities at CSR Indore’ organized by UGC-DAE Consortium for Scientific Research, Indore, during Dec. 10 to Dec. 12, 2007.
3. Workshop on "Physics with Homemade Equipment and Innovative Experiments" from 12th Nov 2007 to 17th Nov, 2007 at IUAC, New Delhi
4. Awareness Workshop on ‘The facilities of UGC-DAE CSR at CSR Indore’ organized by UGC-DAE Consortium for Scientific Research, Indore and Department of Physics, University of Rajasthan, Jaipur , during Nov. 18 to Nov. 19, 2005.
5. Workshop on “Utilization of Energetic ion beams for materials research” organized by IUC-DAEF and MSD, IGCAR, Kalpakkam, during July 29-31, 2003.
6. Workshop on for “Upgrading PG Laboratories”, organized by CDPE, University of Rajasthan, Jaipur, during June 11-14, 2003.
7. Three Day Need Assessment Orientation workshop from 21-08-1995- to 23-08- 1995 at *Academic Staff College, University of Rajasthan, Jaipur.*
8. Workshop on "*Computational Techniques in Neutron scattering*" conducted by the *IUC-DAEF, Indore,* during 03-03-1995 to 15-03-1995.
9. Three months Certificate course in the Scientific Glass instrumentation from 15<sup>th</sup> June, 1993 to 30<sup>th</sup> Sept., 1993, in “ *Techniques of Ampoules and Vacuum Sealing for R & D work* ” at *USIC, University of Rajasthan, Jaipur.*

### **Fellowships**

1. Project Assistant (28-10-91 to 5-5-92) in an IUC-DAEF Research Project Sanctioned to Dr. B. K. Srivastava, Professor, Department of Physics, University of Rajasthan, and Jaipur.
2. Junior Research fellowship (from 6-5-92 to 27-10-93) in an IUC-DAEF research project “Study of magnetic structure of some 3d metal alloys” Sanctioned to Dr. B. K. Srivastava, Professor, Department of Physics, University of Rajasthan, Jaipur.
3. Senior Research fellowship (from 28-10-93 to 31-03-95) in an IUC-DAEF research project" Study of magnetic structure of some 3d metal alloys" Sanctioned to Dr. B. K. Srivastava, Professor, Department of Physics, University of Rajasthan, Jaipur.
4. Senior Research fellowship (from 01-04-95 to 30-07-97) in IUC-DAEF research project" Study of magnetic structure of some transition metal - metalloid alloys” sanctioned to Dr. B. K. Srivastava, Professor, Department of Physics, University of Rajasthan, Jaipur.

## List of Publications

### In Journals

1. Comprehensive in-vitro and magnetic hyperthermia investigation of biocompatible non-stoichiometric  $Zn_{0.5}Ca_{0.5}Fe_2O_4$  and  $Mg_{0.5}Ca_{0.5}Fe_2O_4$  nanoferrites on lung cancer cell lines  
Sudeep.Tiwari, Pragya. Joshi, Krishnapriya Hazarika, Papori Seal, Jyoti Prakash Borah, Rushikesh Fopase, Lalit M. Pandey, Sher Singh Meena, **Sudhish Kumar**  
Journal of Alloys and Compounds (*in press*)  
**Impact Factor: 6.37**
2. Reversible shuffling of the  $Ce^{3+} \leftrightarrow Ce^{4+}$  through anion(O/P) for efficient overall photocatalytic water splitting with P-doped ceria bismuth oxide  
Kahkashan Ansari, **Sudhish Kumar**, Atsushi Sato, Ryosuke Hattori, Kiyoto Matsuishi, Kazuhiro Marumoto, Neelu Chouhan  
Journal of Molecular Liquids **383** (2023) 122103  
**Impact Factor: 6.0**
3. Temperature-dependent magnetic and electrical behavior in the  $La_{0.50}Pr_{0.50}Mn_{0.8}Co_{0.2}O_3$  perovskite  
M. S. Rulaniya, Namita Kumari, Sarita, Anchal, S. R. Choudhary, K. K. Palsaniya, Priya, Ritu, P. A. Alvi, S. N. Dolia, **Sudhish Kumar** & B. L. Choudhary  
Emergent Materials (2023)  
<https://doi.org/10.1007/s42247-023-00536-6>  
**Impact Factor: 3.8**
4. X-Ray Photoelectron Spectroscopy Study of Host/Dopant Cation's Valence State and Formation of  $F^{+}$ -Centers in Pr-Doped  $CeO_2$  Nanomaterials  
H. R. Khakhal, **Sudhish Kumar**, S. N. Dolia, V. S. Vats, B. Dalela, P. A. Alvi, Shalendra Kumar, and S. Dalela  
Nano <https://doi.org/10.1142/S1793292023500662>  
**Impact Factor: 1.2**
5. Correlation of oxygen defects, oxide-ion conductivity and dielectric relaxation to electronic structure and room temperature ferromagnetic properties of  $Yb^{3+}$  doped  $CeO_2$  nanoparticles,  
H.R. Khakhal, **Sudhish Kumar**, D. Patidar, Shalendra Kumar , V.S. Vats , B. Dalela, P.A. Alvi, N.S. Leel, S. Dalela  
Materials Science and Engineering: **B 297** (2023) 116675  
**Impact Factor: 3.6**
6. Synthesis, structural, morphological and optical properties of environment friendly yellow inorganic pigment  $Bi_4Zr_3O_{12}$   
Bharat Kumar, Ragini Sharma, Himani Bhoi, Khushboo Punia, **Sudhish Kumar**, Shiv K. Barbar  
Optical Materials **142** (2023) 114040  
**Impact Factor: 3.9**
7. Impact of  $Gd^{3+}$  doping on structural, electronic, magnetic, and photocatalytic properties of  $MnFe_2O_4$  nanoferrites and application in dye-polluted wastewater remediation  
Arvind Kumar, Mahendra Kumar Gora, Ganesh Lal, Banwari Lal Choudhary, Parmeshwar Lal Meena, Rajendra Singh Dhaka, Rishi Kumar Singhal, **Sudhish Kumar** & Satya Narain Dolia  
Environmental Science and Pollution Research **30** (2023) 8820–18842  
**Impact Factor: 5.8**
8. Ferro- to Paramagnetic Phase Transition in  $La_{0.90}Pr_{0.10}Mn_{0.8}Co_{0.2}O_3$  Perovskite  
B. L. Choudhary, Namita Kumari, Sarita, Anchal, K. K. Palsaniya, S. R. Choudhary, Priya, P. A. Alvi, S. N. Dolia & **Sudhish Kumar**

**Impact Factor: 2.0**

9. Coexistence of superparamagnetism and superspin glass in non-stoichiometric  $\text{Zn}_{0.5}\text{Ca}_{0.5}\text{Fe}_2\text{O}_4$  nanoferrite, Sudeep Tiwari, Ganesh Lal, Himani Bhoi, Khushboo Punia, Sher Singh Meena, **Sudhish Kumar**, Journal of Magnetism and Magnetic Materials, **570** (2023) 170466.  
**Impact Factor: 3.097**
10. Defect mediated mechanism in greenly synthesized undoped,  $\text{Al}^{+3}$ ,  $\text{Cu}^{+2}$  and  $\text{Zn}^{+2}$  doped  $\text{TiO}_2$  nanoparticles for tailoring bandgap, luminescence, magnetic and electrical properties  
Pragya Joshi, Sudeep Tiwari, Khushboo Punia, **Sudhish Kumar**  
Optical Materials **132** (2022) 112778.  
**Impact Factor: 3.754**
11. Role of defects and oxygen vacancy on structural, optical and electronic structure properties in Sm substituted ZnO nanomaterials  
J. Sahu, **Sudhish Kumar**, V. S. Vats, P. A. Alvi, B. Dalela, D. M. Phase, M. Gupta, Shalendra Kumar, and S. Dalela,  
J. Mater Sci: Mater Electron **33** (2022) 21546–21568  
**Impact Factor: 2.779**
12. Exploring the defects and vacancies with photoluminescence and XANES studies of  $\text{Gd}^{3+}$  substituted ZnO, Jyoti Sahu, **Sudhish Kumar**, V. S. Vats, P. A. Alvi, B. Dalela, Shalendra Kumar, D. M. Phase, M. Gupta, S. Dalela,  
**Particle & Particle Characterization** **39** (2022) 2200116.  
**Impact Factor: 3.467**
13. Green synthesis and characterization of  $\text{Mg}_{0.93}\text{Na}_{0.07}\text{O}$  nanoparticles for antimicrobial activity, cytotoxicity and magnetic hyperthermia  
H. Bhoi, S. Tiwari, G. Lal, K. K. Jani, S. K. Modi, P. Seal, V. Saharan, K. B. Modi, J. P. Borah, K. Punia, **S. Kumar**,  
Ceramics International **48** (2022) 28355-28373.  
**Impact Factor: 5.532**
14. Exploration of spectroscopic, surface morphological, structural, electrical, optical and mechanical properties of biocompatible PVA-GO PNCs  
S. B. Dangi, S.Z.Hashmi, U. Kumar, B. L.Choudhary, A. E. Kuznetsov, S. Dalela, S. Kumar, S. N. Dolia, **S. Kumar**, B. F. I. Sofi, R. Darwesh, P.M.Z.Hasan, P.A.Alvi,  
Diamond and Related Materials **127** (2022) 109158.  
**Impact Factor: 3.806**
15. Oxygen vacancy induced structural and domain size controlled magnetic behavior of  $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$  perovskite,  
B. L. Choudhary, U. Kumar, A. M. Quraishi, P. M. Z. Hasan, R. Darwesh, S. Kumar, S. Dalela, **S. Kumar**, S. N. Dolia and P. A. Alvi1,  
J. Mater Sci: Mater Electron **33** (2022) 6829–6841  
**Impact Factor: 2.779**
16. Lattice defects and oxygen vacancies formulated ferromagnetic, luminescence, structural properties and band-gap tuning in  $\text{Nd}^{3+}$  substituted ZnO nanoparticles, J. Sahu, S. Kumar, V. S. Vats, P. A. Alvi, B. Dalela, **S. Kumar**, S. Dalela,  
Journal of Luminescence **243** (2022) 118673.  
**Impact Factor: 4.171**

17. Exploring Magnetic Behaviour in  $\text{La}_{0.70}\text{Pr}_{0.30}\text{Mn}_{0.8}\text{Co}_{0.2}\text{O}_3$  Perovskite,  
B. L. Choudhary, K. K. Palsaniya, S. R. Choudhary, J. Kumari, N. Kumari, A. M. Quraishi, P. A. Alvi, S. N. Dolia & **S. Kumar**,  
J. Supercond Nov Magn **35** (2022) 1183-1193.  
**Impact Factor: 1.675**
18. Oxygen vacancies and defects induced room temperature ferromagnetic properties of pure and Fe-doped  $\text{CeO}_2$  nanomaterials investigated using X-ray photoelectron spectroscopy,  
S. Soni, **S. Kumar**, V. S. Vats, H. R. Khakhal, B. Dalela, S. N. Dolia, P. A. Alvi, S. Dalela,  
Journal of Electron Spectroscopy and Related Phenomena **254** (2022)147140.  
**Impact Factor: 1.957**
19. Exploring the structural, elastic, optical, dielectric and magnetic characteristics of  $\text{Ca}^{2+}$  incorporated superparamagnetic  $\text{Zn}_{0.5-x}\text{Ca}_{0.1}\text{Co}_{0.4+x}\text{Fe}_2\text{O}_4$  ( $x = 0.0, 0.05$  &  $0.1$ ) nanoferrites,  
G. Lal, K. Punia, H. Bhoi, S. N. Dolia, B. L. Choudhary, P. A. Alvi, S. Dalela, S. K. Barbar, **S. Kumar**,  
Journal of Alloys and Compounds **886** (2021) 161190.  
**Impact Factor: 5.316**
20. Nanoporous carbon doped ceria bismuth oxide solid solution for photocatalytic water splitting  
K. Ansari, S. Dalela, **S. Kumar** and Neelu Chouhan,  
Sustainable Energy & Fuels **5** (2021) 2545  
**Impact Factor: 6.813**
21. Low temperature field dependent magnetic study of the  $\text{Zn}_{0.5}\text{Co}_{0.5}\text{Fe}_2\text{O}_4$  nanoparticles  
B. L. Choudhary, Garima, P.M.Z. Hasan, Reem Darwesh, **S. Kumar**, S. Dalela, S.N. Dolia, P.A. Alvi  
Journal of Magnetism and Magnetic Materials **536** (2021) 168102.  
**Impact Factor: 2.993**
22. A comprehensive study on the impact of Gd substitution on structural, optical and magnetic properties of ZnO nanocrystals  
K. Punia, G. Lal, S. Dalela, S.N. Dolia, P. A. Alvi, S.K. Barbar, K. B. Modi, **S. Kumar**,  
Journal of Alloys and Compounds **868** (2021) 159142.  
**Impact Factor: 5.316**
23. Impact of hydrogenation on the structural, dielectric and magnetic properties of  $\text{La}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ ,  
G. Lal, J. Joshi, H. Bhoi, K. Punia, S. N. Dolia, B. L. Choudhary, S. K. Barbar and **S. Kumar**  
Applied Physics A **127** (2021)114.  
**Impact Factor: 2.584**
24. Oxygen vacancies mediated cooperative magnetism in ZnO nanocrystals: A  $d^0$  ferromagnetic case study  
Khushboo Punia, Ganesh Lal, Shiv K. Barbar, Satya Narain Dolia, Parvez Ahmad Alvi, Saurabh Dalela,  
**Sudhish Kumar**  
Vacuum **184** (2021) 109921.  
**Impact Factor: 3.627**
25. Interplay of structural, optical, and magnetic properties of  $\text{Ce}_{1-x}\text{Nd}_x\text{O}_{2-\delta}$  nanoparticles with electronic structure probed using X-ray absorption spectroscopy  
Mridula Dave, **Sudhish Kumar**, B. Dalela, P.A. Alvi, SS Sharma, D. M. Phase, M. Gupta, Shalendra Kumar, S. Dalela  
Vacuum **180** (2020) 109537.  
**Impact Factor: 3.627**
26. Defects and oxygen vacancies tailored structural, optical and electronic structure properties of Co-doped

ZnO nanoparticle samples probed using soft X-ray absorption spectroscopy,  
Jyoti Sahu, Swati Soni, **Sudhish Kumar**, B. Dalela, P. A. Alvi, S. S. Sharma, D. M. Phase, M. Gupta,  
Shalendra Kumar, S. Dalela,  
Vacuum **179** (2020) 109538.

**Impact Factor: 3.627**

27. Ca<sup>2+</sup> substitution effect on the defect structural changes in the quadruple perovskite series Ca<sub>1+x</sub>Cu<sub>3-x</sub>Ti<sub>4</sub>O<sub>12</sub> studied by positron annihilation and complementary methods,  
Divyesh V. Barad, Priya L. Mange, Komal K. Jani, Shubharaj Mukherjee, Maudud Ahmed, **Sudhish Kumar**,  
Satya N. Dolia, Rabia Pandit, Pooja Y. Ravalm, Kunal B. Modi, P. M. G. Nambissan,  
Ceramics International **47** (2021) 2631-2640.  
**Impact Factor: 4.527**
28. Synthesis, structural, dielectric and peculiar magnetic behaviour of Pb<sub>2</sub>Mn<sub>2</sub>Si<sub>2</sub>O<sub>9</sub>,  
Shiv K. Barbar, Bharat Kumar, Om Prakash, Indu Bala, Bajrang L. Prashant, Khushboo Punia, **Sudhish Kumar**,  
Ceramics International **46** (2020) 28716-28724.  
**Impact Factor: 4.527**
29. Oxygen vacancies and F<sup>+</sup> centre tailored room temperature ferromagnetic properties of CeO<sub>2</sub> nanoparticles with Pr doping concentrations and annealing in hydrogen environment,  
H. R. Khakhal, **Sudhish Kumar**, S. N. Dolia, B. Dalela, V. S. Vats, Sonia Zeb, Hashmi, P. A. Alvi, Shalendra Kumar, S. Dalela,  
Journal of Alloys and Compounds **844** (2020) 156079.  
**Impact Factor: 5.316**
30. Irreversible magnetic behavior with temperature variation of Ni<sub>0.5</sub>Co<sub>0.5</sub>Fe<sub>2</sub>O<sub>4</sub> nanoparticles,  
B. L. Choudhary, Upendra Kumar, Shalendra Kumar, Subhash Chander, **Sudhish Kumar**, S. Dalela, S. N. Dolia, P. A. Alvi,  
Journal of Magnetism and Magnetic Materials **507** (2020) 166861.  
**Impact Factor: 2.993**
31. Synthesis, structural, electrical and magnetic characterization of apatite-type lanthanide silicates,  
Shiv K. Barbar, Praniti Dave, Om Prakash, **Sudhish Kumar**,  
Applied Physics A **126** (2020) 322.  
**Impact Factor: 1.810**
32. Defects and oxygen vacancies tailored structural, optical, photoluminescence and magnetic properties of Li doped ZnO nanohexagons,  
Khushboo Punia, Ganesh Lal, Satya Narain Dolia, **Sudhish Kumar**,  
Ceramics International **46** (2020) 12296-12317  
**Impact Factor: 3.83**
33. Structural, cation distribution, optical and magnetic properties of quaternary Co<sub>0.4+x</sub>Zn<sub>0.6-x</sub>Fe<sub>2</sub>O<sub>4</sub> (x = 0.0, 0.1 and 0.2) and Li doped quinary Co<sub>0.4+x</sub>Zn<sub>0.5-x</sub>Li<sub>0.1</sub>Fe<sub>2</sub>O<sub>4</sub> (x = 0.0, 0.05 and 0.1) nanoferrites,  
Ganesh Lal, Khushboo Punia, Satya Narain Dolia, Parvez A Alvi, Banwari L Choudhary, **Sudhish Kumar**  
Journal of Alloys and Compounds **828** (2020) 154388  
**Impact Factor: 4.65**
34. Cation distribution and magnetic ordering evolution study on Ca<sub>1+x</sub>Cu<sub>3-x</sub>Ti<sub>4</sub>O<sub>12</sub> (x = 0.0–0.2) perovskites,  
D.V. Barad, U. M. Meshiya, N. P. Joshi, P. L. Mange, P.Y. Raval, **Sudhish Kumar**, R. K. Singhal, S. N. Dolia, K. B. Modi,  
Solid State Sciences **99** (2020) 106070.  
**Impact Factor: 2.155**



35. A comparative study on the influence of monovalent, divalent and trivalent doping on the structural, optical and photoluminescence properties of  $Zn_{0.96}T_{0.04}O$  (T:  $Li^+$ ,  $Ca^{2+}$  &  $Gd^{3+}$ ) nanoparticles  
Khushboo Punia, Ganesh Lal, P.A. Alvi, Satya Narain Dolia, S. Dalela, Kunal B. Modi, **Sudhish Kumar**  
Ceramics International **45** (2019)13472-13483.  
**Impact Factor: 3.83**
36. First observation of reversible mechanochromism and chromaticity study on calcium–copper–titanate  
Pooja Y. Raval, Pooja R. Pansara, Nimish H. Vasoya, Khushboo Punia, Satya N. Dolia, Kunal B. Modi  
and **Sudhish Kumar**  
Journal of the American Ceramic Society **102** (2019) 6872-6881  
**Impact factor: 3.502**
37. Rietveld refinement, Raman, optical, dielectric, Mössbauer and magnetic characterization of superparamagnetic fcc- $CaFe_2O_4$  nanoparticles  
Ganesh Lal, Khushboo Punia, Satya Narayan Dolia, P. A. Alvi, S. Dalela and **Sudhish Kumar**  
Ceramics International **45** (2019) 5837-5847.  
**Impact Factor: 3.83**
38. Electronic Structure and Room Temperature Ferromagnetism in Gd-doped Cerium Oxide Nanoparticles for Hydrogen Generation via Photocatalytic Water Splitting  
Swati Soni, Neelu Chouhan, Rajesh Kumar Meena, **Sudhish Kumar**, Bhavna Dalela, Monu Mishra, Rajendra Singh Meena, Govind Gupta, Shalendra Kumar, Parvez Ahmad Alvi, Saurabh Dalela  
Global Challenges **3** (2019) 1800090.  
**Impact Factor: 5.135**
39. Kinetics of sonophotocatalytic degradation of an anionic dye nigrosine with doped and undoped zinc oxide, Srishti Kumawat, Kiran Meghwal, Sudhish Kumar, Rakshit Ameta, Chetna Ameta  
Water Science and Technology **80** (2019) 1466–1475.  
**Impact Factor: 1.638**
40. Magnetic and dielectric studies of multiferroic perovskite  $HoCr_{0.9}TM_{0.1}O_3$  (TM= Fe and Mn)  
S. Mathur, S. Srivastava, S. Surve, R.S. Rajaura, **Sudhish Kumar**, S. N. Dolia  
Materials Research Express **6** (2019) 056107  
**Impact Factor: 1.151**
41. Use of lanthanum cerate ternary oxide as novel photocatalyst for removal of brilliant green from aqueous solution  
Nutan Salvi, S. Kumawat, R. Banu, R. Ameta, **Sudhish Kumar** and Pinki B. Punjabi  
Journal of the Indian Chemical Society **95** (2018) 1217-1226.
42. Defects and oxygen vacancies tailored structural and optical properties in  $CeO_2$  nanoparticles doped with  $Sm^{3+}$  cation  
S. Soni, Sudhish Kumar, B. Dalela, **Sudhish Kumar**, P.A. Alvi, S. Dalela  
Journal of Alloys and Compounds **752** (2018) 520-531.  
**Impact Factor: 4.175**
43. Ti  $L_{3,2}$ - and K- edge XANES and EXAFS study on  $Fe^{3+}$ - substituted  $CaCu_3Ti_4O_{12}$   
Pooja Y. Raval, Niketa P. Joshi, Pooja R. Pansara, Nimish H. Vasoya, **Sudhish Kumar**, Satya Narayan Dolia, Kunal B. Modi, Rishi Kumar Singhal  
Ceramics International **44** (2018) 20716-20722.  
**Impact Factor: 3.45**

44. Effect of thermal history on structural, microstructural properties and J–E characteristics of  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$  polycrystalline ceramic  
P.Y. Raval, A.R. Makadiyaa, P. R. Pansara, P.U. Sharma, N. H. Vasoya, J.A. Bhalodia, **Sudhish Kumar**, S. N. Dolia, K. B. Modi,  
Materials Chemistry and Physics 212 (2018) 343-350.  
**Impact Factor: 2.21**
45. Structural and magnetic behavior of nanocrystalline Cr Doped Co-Mg Ferrite  
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## Papers presented in National and International Conferences

### Invited Talks

1. “Common Characterization Techniques in Materials Science’ in the Refresher Course in Chemical and Physical Sciences, organized under the auspices of UGC-Human Resource Development Centre, MDS University Ajmer on 26<sup>th</sup> September 2018.
2. “abc of X-Ray Diffraction” in the Refresher Course in Chemical and Physical Sciences, organized under the auspices of UGC-Human Resource Development Centre, MDS University Ajmer on 26<sup>th</sup> September 2018.
3. “Crystal and Magnetic Structure Determination Using Rietveld Refinement Technique” in National Conference on Energy, Material and Sustainable Society (EMSS-2018) at KMM, Jaipur, India during January 24-25, 2018.



4. “Application of Rietveld Method to the Structural Characteristics of some Bulk and Nanocrystalline Materials” in the Workshop on Research Methodology in Natural and Applied Science at Faculty Development Center, Banasthali Vidyapith on April 21, 2017.
5. X-Ray Diffraction and Rietveld Refinement of Powder Diffraction Patterns of some Bulk and Nano-crystalline Samples at Refresher Course on Materials Science at Academic Staff College, University of Rajasthan, Jaipur on December 27, 2014.
6. “Application of Rietveld Method to the Structural Characteristics of some Bulk and Nanocrystalline Materials”\_ Sudhish Kumar  
OPTICS'11: A Conference on Light.  
Organized by the Dept. of Physics, NIT Calicut, during May 23 to 25, 2011 at National Institute of Technology Calicut,
7. “Rietveld refinement of diffraction patterns of some bulk and nanocrystalline samples”  
Sudhish Kumar  
National conference and workshop on recent advances in modern communication systems and nanotechnology (NCMCN-2011)  
Organized by Centre for Converging Technologies and Department of Science and Technology, Govt. of Rajasthan at the University of Rajasthan, Jaipur.  
During January 6-8, 2011. IT-11, Page No. 13. Abstract Book NCMCN-2011
8. “Neutron diffraction studies on 3d metal substituted Fe<sub>2</sub>P based alloys”  
Sudhish Kumar  
National Symposium on Radiation Physics (NSRP-18)  
Organized by Department of Physics and ISRP at M.L. Sukhadia University, Udaipur  
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9. Study of magnetic structure of some 3d metal based alloys,  
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### **Poster and Oral presentations in Conferences**

1. Ganesh Lal, Khushboo Punia, S. N. Dolia and Sudhish Kumar, *Influence of Zn Concentration on the Optical and Magnetic Properties of Cobalt-Zinc Nanoferrite*, **Oral presentation** in National Conference on Energy, Material and Sustainable Society (EMSS-2018) at KMM, Jaipur, India during January 24-25, 2018.
2. Khushboo Punia, Ganesh Lal, and Sudhish Kumar, *Influence of Gd substitution on the Structural, Optical Band-gap and Photoluminescence Properties of ZnO Nanoparticles*, **Oral presentation** in National Conference on Energy, Material and Sustainable Society (EMSS-2018) at KMM, Jaipur, India during January 24-25, 2018.
3. Ganesh Lal, Khushboo Punia, S. N. Dolia and Sudhish Kumar, *A Comparative Study on the Temperature and Field Dependent Magnetic Properties of Nanocrystalline CoFe<sub>2</sub>O<sub>4</sub>, ZnFe<sub>2</sub>O<sub>4</sub> and CaFe<sub>2</sub>O<sub>4</sub>*, 21<sup>st</sup> DAE-BRNS Workshop and Symposium on Thermal Analysis at Department of Chemistry Goa University Goa, India, during January 16-20, 2018.
4. Khushboo Punia, Ganesh Lal, V. Rathore and Sudhish Kumar, *Optical and Magnetic Behaviour of Nanocrystalline 5% Ca doped ZnO*, 62<sup>nd</sup> DAE Solid State Physics Symposium (DAE SSPS-2017) at BARC, Mumbai, India during December 26-30, 2017.
5. Khushboo Punia, Ganesh Lal, and Sudhish Kumar, *Effect of Li doping on the structural, optical band gap & Photoluminescence properties of ZnO Nanoparticles*, **Oral presentation** in International Conference on Nanotechnology : Ideas, Innovations & Initiatives (ICN:3I-2017) at IIT, Roorkee during December 6-8, 2017.
6. Ganesh Lal, Khushboo Punia, S. N. Dolia and Sudhish Kumar, *Structural, Optical and Superparamagnetic Behaviour of ZnFe<sub>2</sub>O<sub>4</sub> Nanoparticle*, 2<sup>nd</sup> International Conference on Condensed Matter & Applied Physics at GEC, Bikaner, India during November 24-25, 2017.

7. Khushboo Punia, Ganesh Lal, and Sudhish Kumar, *Optical absorption and Photoluminescence Study of Nanocrystalline Zn<sub>0.92</sub>M<sub>0.08</sub>O (M: Li & Gd)*, 2<sup>nd</sup> International Conference on Condensed Matter & Applied Physics at GEC, Bikaner, India during November 24-25, 2017.
8. Ganesh Lal, Khushboo Punia, S. N. Dolia and Sudhish Kumar, *Structural, Optical and Magnetic Properties of Cobalt Ferrite Nanoparticles*, **Oral presentation** in 21<sup>st</sup> International Conference of International Academy of Physical Sciences (CONIAPS XXI) held at GJUST, Hissar, India during October 28-30-2017.
9. Ganesh Lal, Khushboo Punia, Jyoti, S. N. Dolia and Sudhish Kumar, *Magnetic Behaviour of Hydrogenated La<sub>0.5</sub>Ca<sub>0.5</sub>MnO<sub>3</sub>*, International Conference on Functional Oxides and Nanomaterials 2016 (ICFONM-2016) at Saurashtra University, Rajkot India, during November 11-13, 2016.
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11. Characterization of an Iron Pyritohedron Quasi Crystal,  
Hemant K. Arvind, S. R. Jakhar and *Sudhish Kumar*,  
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18. Magnetic behaviour of Pr Substituted Perovskite LaMn<sub>0.8</sub>Co<sub>0.2</sub>O<sub>3</sub>  
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