

**Personal Detail:**

**Dr. Uday Kumar,**  
Assistant Professor,  
Department of Physics,  
National Institute of Technology,  
Jamshedpur – 831014,  
Jharkhand, India,  
Nationality: Indian,  
Contact number: 9432336797,  
E-mail: [uday.phy@nitjst.ac.in](mailto:uday.phy@nitjst.ac.in), [udayphy@yahoo.co.in](mailto:udayphy@yahoo.co.in)

**Education:**

- **Ph.D.: Physics (2003)** -Institute of Chemical Technology, University of Mumbai, India  
  
*Title: Spectroscopic properties and lasing action of laser dyes in sol-gel glasses.*
- **M.Sc.: Physics (1994) -- First class --** Magadh University, Bodh Gaya, India.
- **B.Sc. (Hon.): Physics (1991) -- First class --** Magadh University, Bodh Gaya, India.

**Work Experience:**

- **Assistant professor:** (1<sup>st</sup> August 2018 to till date) NIT Jamshedpur, Jamshedpur, India.
- **Senior Scientific Officer:** (July 2007 to 31<sup>st</sup> July 2018) IISER Kolkata, Kolkata, India.
- **Visiting Scientist:** (1 May 2006 to April 2007) Milano Bicocca University, Italy.
- **Research Associate:** (1 April 2005 to 30 April 2006) S. N. Bose National Centre for Basic Sciences, Salt Lake, Kolkata, India
- **Research Associate on CSIR Project:** (October 2002 to March 2005) S. N. Bose National Centre for Basic Sciences, Salt Lake, Kolkata, India
- **Visiting Lecturer:** (July 2001- July 2002), Veermata Jijabai Technological Institute (VJTI), Mumbai, India.

- **Senior Research Fellow:** (January 1999 –October1999) UDCT, Bombay, India
- **Junior Research Fellow:** (January 1997-December 1999) UDCT, Bombay, India
- **Technical Assistant:** (August 1996 to January 1997), Lokmanya Tilak College of Engg., New Bombay, India.
- **Laboratory Assistant:** (August 1994-April 1996), D.A.V. BASL Vidyamandir, Bihar, India

### **Publications:**

- International Journal Published: **25**
- Paper in International Conference Proceeding: **07**
- Invited Book Chapter International Publisher: **01**
- Invited talk/oral presentations: **09**
- National/International Conferences/symposia/workshop presentations: **22**

### **Awards /Honours/Recognitions:**

- Invited for **talk/resource person** at various occasion in seminar/conferences.
- **Visiting Scientist fellowship** awarded by Milano-Bicocca University, Italy, in year 2006-2007.
- **Reviewer of International Journals** such as Journal of Non-Crystalline Solids, Elsevier; Journal of Fluorescence, Springer; Journal of Luminescence, Elsevier.
- **Life Membership** of Laser & Spectroscopy Society of India.
- **JRD Tata Scholarship** 1999 during doctoral research ICT, Mumbai.
- JRF/SRF DST fellowship 1997 to 2002 during doctoral research ICT, Mumbai.

### **Research Interest:**

#### ***Experimental research under following topics***

- Magnetism including Quantum phase transition & frustration.
- Photophysics/Fluorescence spectroscopy.
- Physics of size reduction/ nanomaterials.

- Coherent optics.
- Strongly correlated system.
- Topological insulator.
- Functional materials.
- Application development.

**Teaching & Research Experience:** Nearly 17 Years as on August 2019.

**List Publications:**

**A. International Journals:**

1. Rajyavardhan Ray, A. K. Himanshu, Golak Mandal, B. .K. Singh, **Uday Kumar** , S. N. Jha, N. Patra, Kaustava Bhattacharyya, D. Bhattacharya, A. B. Shinde, P. S. R. Krishna; “Revised crystal structure and electronic properties of Ba(Fe<sub>0.5</sub>Nb<sub>0.5</sub>)O<sub>3</sub> ceramics”; Submitted to archive: arxiv: 1907.00649 or arxiv: 1907.00649v1 (**01 July 2019**)
2. Rajyavardhan Ray , A.K. Himanshu, Pintu Sen , **Uday Kumar**, Manuel Richter, T.P. Sinha; “Effects of octahedral tilting on the electronic structure and optical properties of d<sub>0</sub> double perovskites A<sub>2</sub>ScSbO<sub>6</sub> (A= Sr,Ca)”;  
Journal of Alloys and Compounds 705 (**2017**) 497-506
3. Sudipta Saha, Jalpa Soni, Subham Chandel, **Uday Kumar**, Nirmalya Ghosh; “Probing intrinsic anisotropies of fluorescence: Mueller matrix approach”;  
Journal of Biomedical Optics 20 (8) (**2015**) 085005-7
4. H. Singh, T. Chakraborty, K. Srikanth, R. Chandra, C. Mitra, **U. Kumar**;  
“Study of exchange bias in NiCr<sub>2</sub>O<sub>4</sub> nanoparticles”  
Physica B: Condensed Matter 448 (**2014**) 77-79
5. Sadhan Chanda, Sujoy Saha, Alo Dutta, A.S. Mahapatra, P.K. Chakrabarti, **Uday Kumar**, T.P. Sinha;  
“Multiferroicity in La<sub>1/2</sub>Nd<sub>1/2</sub>FeO<sub>3</sub> nanoparticles”;  
Solid State Sciences 37 (**2014**) 55-63
6. S. Saha, S. Chanda, A. Dutta, **U. Kumar**, R. Ranjan, T.P. Sinha;;  
“Dielectric relaxation and anti-ferromagnetic coupling of BiEuO<sub>3</sub> and BiGdO<sub>3</sub> ”  
Journal of Magnetism and Magnetic Materials 360 (**2014**) 80-86
7. H. Singh, T. Ono, T. Chakraborty, K. Srikanth, A. Venimadhav, R. Chandra, C. Mitra, **U. Kumar**;

- “A study of crossover from 3D ferrimagnetic bulk  $\text{NiCr}_2\text{O}_4$  compound into 2D spin-glass-like nanophase”;  
Journal of Nanoparticle Research 16 (4), (**2014**) 1-9
8. J. Soni, H. Purwar, H. Lakhotia, S. Chandel, C. Banerjee, **U. Kumar**, N. Ghosh;  
“Quantitative fluorescence and elastic scattering tissue polarimetry using an Eigenvalue calibrated spectroscopic Mueller matrix system”,  
Optics express 21 (13), (**2013**) 15475-15489
9. S. Mukherjee, Rajarshi Mukherjee, S. Banerjee, R. Ranganathan and **Uday Kumar**,  
“Glassy behavior in the layered perovskites  $\text{La}_{(2-x)}\text{Sr}_x\text{CoO}_4$  ( $1:1 \leq x \leq 1:3$ )”  
Journal of Magnetism and Magnetic Materials, 324 (**2012**) 928
10. Aparna V. Deshpande and **Uday Kumar**,  
“Efficient lasing action from Rhodamine-110 (Rh-110) impregnated sol-gel silica samples prepared by dip method”  
Journal of Luminescence 130 (**2010**) 839
11. R. Benocci, D. Batani, H. Jawad, P. Carpeggiani, **U. Kumar**, A. Levchenko, N. Venkatakrishnan,  
“An automated autocorrelator for the measurement of high-frequency femtosecond pulses”  
Radiation Effects & Defects in Solids, Vol. 165 (Nos. 6–10) (**2010**) 681
12. A. V. Deshpande and **Uday Kumar**,  
“Effect of higher protonation on lasing performance of Rhodamine-B in sol-gel glasses”,  
Journal of Non-Crystalline Solids, 355 (**2009**) 501
13. A. V. Deshpande and **Uday Kumar**,  
“Correlation between photophysical properties and lasing performances of Rhodamine-19 in three types of sol-gel glass hosts”  
Journal of Luminescence 128 (**2008**) 1121
14. P. K. Chakrabarti, B. K. Nath, S. Brahm, S. Das, K. Goswami, **Uday Kumar**, P. K. Mukhopadhyay and D. Das,  
“Preparation of Noncrystalline  $\text{Ni}_{0.2}\text{Zn}_{0.6}\text{Cu}_{0.2}\text{Fe}_2\text{O}_4$  and its characterization by Mössbauer spectroscopy and ac magnetic susceptibility”,  
Journal of Physics: Condensed matter 18 (**2006**) 5253
15. **Uday Kumar**, P. K. Mukhopadhyay, Biplab Sanyal, Olle Eriksson, Per Nordblad, Durga Paudyal, Abhijit Mookerjee,  
“Experimental and theoretical study of Nickel-Platinum annealed alloy”  
Physical Review B, 74 (**2006**) 064401

16. S. Banik, Aparna Chakrabarti, **Uday Kumar**, P. K. Mukhopadhyay, C. Biswas, A. M. Awasthi, R. S. Dhaka, A. K. Shukla, S. R. Berman,  
“Electronic structure of  $\text{Ni}_{2+x}\text{Mn}_{1-x}\text{Ga}$ ”  
Physical Review B 74 **(2006)** 085110
17. Rajeev Ranjan, S. Banik, S. R. Barman, **U. Kumar**, P. K. Mukhopadhyay, and Dhananjai Pandey,  
“Powder x-ray diffraction study of the thermoelastic martensitic transition in  $\text{Ni}_2\text{Mn}_{1.05}\text{Ga}_{0.95}$ ”  
Physical Review B 74, **(2006)** 224443
18. A. V. Deshpande and **Uday Kumar**,  
“Molecular Forms of Coumarin-307 in Sol-Gel Glasses”,  
Journal of Fluorescence 16 **(2006)** 679
19. **Uday Kumar**, Emad Badawi and P. K. Mukhopadhyay,  
“Characterization of Al-Mg alloys (50xx) by Using Positron Annihilation, X-ray Diffraction and Vibrating Reed Techniques”,  
International Journal of Modern Physics B, 19 **(2005)** 3397
20. B. K. Nath, P. K. Chakrabarti, S. Das, **Uday Kumar**, P. K. Mukhopadhyay and D. Das,  
“Mössbauer studies on nanoparticles of zinc substituted magnesium ferrite”,  
Journal of Surface Science and Technology No. 3-4, 21 **(2005)** 1
21. **Uday Kumar**, K.G. Padmalekha, P.K. Mukhopadhyay, Durga Paudyal, Abhijit Mookerjee,  
“Magnetic transition in Ni-Pt alloy systems: Experiment and Theory”  
Journal of Magnetism and Magnetic Materials, 292 **(2005)** 234
22. P. Dey, T. K. Nath, **Uday Kumar**, P. K. Mukhopadhyay,  
“Effect of nanosize modulation of granular  $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$  manganites on temperature dependent low field spin polarized tunneling magnetoresistance”,  
Journal of Applied Physics 98 **(2005)** 014306
23. B.K. Nath, P.K. Chakrabarti, S. Das, **Uday Kumar**, P.K. Mukhopadhyay and D. Das,  
“Mössbauer, XRD and ac susceptibility studies on nanoparticles of zinc substituted magnesium ferrite”,  
European Physical Journal B, 39 **(2004)** 417
24. P. K. Mukhopadhyay, **Uday Kumar** and Emad Badawi,  
“A study on the effect of annealing process on sound velocity and internal friction using the vibrating reed technique”,  
Surface Review and Letters 11(4-5) **(2004)** 451
25. A.V. Deshpande and **Uday Kumar**,

“Effect of method of preparation on photophysical properties of Rh-B impregnated Sol-Gel hosts”,  
Journal of Non-crystalline Solids 306 (2002) 149

### **B. Papers in International Conference Proceeding:**

1. Golak Mondal, D. Jha, A. K. Himanshu, J. Lahiri, B. K. Singh, **Uday Kumar**, and Rajyavardhan Ray; “Optical and electronic structure studies of half metallic in  $\text{Sr}_2\text{CoWO}_6$  double Perovskite”  
AIP Conference Proceedings 1942, 090026 (2018); doi: 10.1063/1.5028941
2. Golak Mandal, Dhiraj Jha, A.K. Himanshu, P. Mukherjee, N.K. Das, B.K. Singh, **Uday Kumar**, T.P. Sinha; “Optical and electronic structure studies of half metallic in  $\text{Sr}_2\text{CoWO}_6$  double perovskite”;  
AIP Conference Proceedings 1832 (1) (2017) 140039
3. Rajyavardhan Ray, A. K. Himanshu, J. Lahiri, **Uday Kumar**, Pintu Sen, S. K. Bandyopadhyay, T. P. Sinha;  
“Optical and electronic properties of double perovskite  $\text{Ba}_2\text{ScSbO}_6$ ”;  
AIP Conference Proceedings 1731 (2016) 140041-3
4. Dhiraj Kumar Jha, Golak Mandal, Chandan Ray, A.K. Himanshu, B.K. Singh, **Uday Kumar**, B.K. Choudhary;  
“Ab initio study of double perovskites  $\text{Ba}_2\text{DySbO}_6$ ”;  
AIP Conference Proceedings 1731 (2016) 090036-3
5. Rajyavardhan Ray, A.K. Himanshu, J. Lahiri, , **Uday Kumar**, Pintu Sen, S.K. Bandyopadhyay, T. P. Sinha;  
“Electronic structure of ordered double perovskite  $\text{Ba}_2\text{CoWO}_6$ ”;  
AIP Conference Proceeding 1591 (1) (2014) 1155
6. R. Ray, A.K. Himanshu, K. Brajesh, S.K. Bandyopadhyay, **U. Kumar**, T.P. Sinha;  
“Phase transitions in double perovskite  $\text{Sr}_2\text{ScSbO}_6$ : An Ab-initio study”  
AIP Conference Proceedings 1591 (2014) 1167-1169
7. B.K. Choudhary, A.K. Himanshu, **Uday Kumar**, S.K. Bandyopadhyay, Pintu Sen, S.N. Singh, T.P. Sinha;  
Magnetic and ferroelectric studies of double perovskite  $(\text{KBi})(\text{FeNb})\text{O}_6$  ceramics;  
American Institute of Physics Conference Series 1512 (2013) 1268-1269

**C. Book/Book Chapter Published:**

1. **Uday Kumar, (Invited Book Chapter)** In: “The Sol-Gel Process: Uniformity, Polymers and Applications”; Editors: Rachel E. Morris; Sol-Gel based solid state dye-laser—Past, Present and Future, Nova Science Publishers **2010**, ISBN: 978-1-61761-321-0

**D. Few Important Invited talk/Oral Presentation:**

1. **Uday Kumar (Invited Lecture);**  
“Crystal field effect in Condensed Matter Physics”;  
Departmental Lecture, Physics Department, **16<sup>th</sup> September 2017**, Jubilee College, Bhukunda, Jharkhand, India.
2. **Uday Kumar (Invited Lecture);**  
“Renewable Energy and its Challenges”;  
National Conference on Renewable Energy, 6<sup>th</sup> **September 2016**, PTPS College, Patratu, Jharkhand, India.
3. **Uday Kumar (Invited Lecture);**  
“Photophysical Properties of Organic Molecule Rh-6G in Highly Acidic medium”  
National Conference On “Material Science for Energy Harvesting (MSEH)”, **8-9 January 2015**, Jubilee College, Bhukunda, Jharkhand, India.
4. **Uday Kumar (Invited Lecture);**  
“Frustration in  $\text{NiCr}_2\text{O}_4$ ”;  
6<sup>th</sup> Bihar Science Conference **23-25 December 2014**.
5. **Uday Kumar (Invited Lecture),**  
“Magnetism and measurement techniques”;  
UGC- Academic Staff College, **25-26 July 2014**, Ranchi University, Ranchi, Jharkhand, India.
6. K. Srikanth, **Uday Kumar (Talk);**  
“Exotic properties of Rhodamine-6G in highly acidic medium”  
National Conference on Advances in Lasers and Spectroscopy (**ALS-2012**), **01-03 November 2012**, ISM Dhanbad, India
7. Pradip Khatua, Bhavtosh Bansal and **Uday Kumar (Talk);**  
“High field pulse magnet facility at IISER-Kolkata”  
National Conference on Condensed Matter Physics held in BIT Mesra, Ranchi, Jharkhand from **August 29-31, 2012 (CMDAYS-2012), India**
8. **Uday Kumar, (Invited talk as resource person);**

UGC Sponsored National Seminar On "New Sources of Energy Using Nanotechnology" from **8-10 September 2011**, Jubilee College, Bhurkunda, Jharkhand, **India**

9. S. R. Burman, **Uday Kumar** (Talk) and P. K. Mukhopadhyay;  
"Investigations into the behaviors of a series of shape memory alloys  $\text{Ni}_{2+x}\text{Mn}_{1-x}\text{Ga}$ "  
National Conference on Condensed Matter Days 2005 held at Berhampur, Orissa in  
**August 2005 (CMDAYS-2005) India**

#### **E. National/International Conferences/symposia/workshop presentations:**

1. B. K. Choudhary, A.K. Himanshu, **Uday Kumar**, S.K. Bandyopadhyay, Pintu Sen, S. N. Singh, T. P. Sinha;  
DAE Solid State Physics Symposium, **2012**, BARC Mumbai, India
2. Pradip Khatua, Bhavtosh Bansal and **Uday Kumar** (Talk); "High field pulse magnet facility at IISER-Kolkata" presented in National Conference on Condensed Matter Physics held in BIT Mesra, Ranchi, Jharkhand from **August 29-31, 2012 (CMDAYS-2012)**
3. B.K. Choudhary, A.K. Himanshu, **Uday Kumar**, S.N. Singh, S.K. Bandyopadhyay, T.P. Sinha; "Structural, magnetic and dielectric studies of  $(\text{NaBi})(\text{FeNb})\text{O}_6$  complex perovskite" presented in National Conference on Condensed Matter Physics held in BIT Mesra, Ranchi, Jharkhand from **August 29-31, 2012 (CMDAYS-2012)**
4. Harkirat Singh, K. Srikanth, Chiranjib Mitra, and **Uday Kumar**,  
"International Conference on frustrated materials" held in Germany from **4-8 June 2012**
5. **Uday Kumar**, Current Topics in Condensed Matter, held at Indian Institute of Science Education & Research Kolkata from **7 to 9 October 2011 (CTCM 2011)**
6. **Uday Kumar**, Kambalapalli Srikanth, R. Ranganathan, Chandan Mazumdar:  
"MAGNETISM AND CRYSTAL STRUCTURE OF BULK AND SMALL PARTICLE  $\text{NiCr}_2\text{O}_4$  SPINEL OXIDE",  
**International Conference on Magnetism and Magnetic Materials – 2010 (ICMM-2010)**,  
Saha Institute of Nuclear Physics, Kolkata, **25-31 October 2010**.
7. **Uday Kumar**, "Science Conclave 2008" held at IIIT Allahabad from **15-20 December 2008**
8. **Uday Kumar**, "Applications of Transmission and Scanning Electron Microscopy in life sciences", held at NICED Kolkata dated **5-6 December 2007**
9. S. R. Burman, **Uday Kumar** and P. K. Mukhopadhyay,  
"Investigations into the behaviors of a series of shape memory alloys  $\text{Ni}_{2+x}\text{Mn}_{1-x}\text{Ga}$ "  
Orally Presented to Condensed Matter Days 2005, Berhampur, India



10. **Uday Kumar**, Mitali Banerjee, S. K. Choudhury, D.Das and P.K.Mukhopadhyay, “Free Volume effects in Bi2223 studied through positron annihilation studies”  
**Condensed Matter Days 2005, Berhumpur, India**
11. B.K. Nath, P.K. Chakrabarti, S. Das, **Uday Kumar**, P.K. Mukhopadhyay, K. Goswami, D. Das,  
“Mössbauer spectroscopy and AC susceptibility of nano-crystalline  $\text{Ni}_x\text{Cu}_x\text{Zn}_{(1-2x)}\text{Fe}_2\text{O}_4$  ( $x = 0.1, 0.2, \text{ and } 0.3$ )”  
**Condensed Matter Days 2005, Berhumpur, India**
12. B.K. Nath, P.K. Chakrabarti, S. Das, **Uday Kumar**, P.K. Mukhopadhyay and D. Das,  
“Influence of pH on the synthesis of nanocrystalline  $\text{CoFe}_2\text{O}_4$  by co-precipitation method”,  
**DAE Solid State Physics Symposium, 2004, Amritsar, India**
13. B.K. Nath, P.K. Chakrabarti, S. Das, **Uday Kumar**, P.K. Mukhopadhyay and D. Das,  
“Mössbauer studies on nanoparticles of zinc substituted magnesium ferrite”,  
**Presented in the ICSM, Jadavpur University, Kolkata, 2004**
14. **Uday Kumar** and P. K. Mukhopadhyay  
“Dynamic elastic properties of metallic alloys and metglasses”  
**Orally Presented in MRSI-NML meeting at NML, Jamshedpur in August 2004**
15. B. K. Nath, P. K. Chakrabarti, **Uday Kumar**, P. K. Mukhopadhyay, S. Das and D. Das,  
“Superparamagnetic properties of zinc substituted nanocrystalline cobalt ferrite”,  
**Condensed Matter Days 2004, Silong, India**
16. **Uday Kumar**, P.K.Mukhopadhyay,  
“Study the Effect of Annealing Process on Sound Velocity & Internal Friction Using a Vibrating Reed Technique”,  
**Condensed Matter Days 2004, Silong, India**
17. B.K.Nath, P.K.Chakrabarti, T.Roy, S.K.Brahma, **UdayKumar**, P.K.Mukhopadhyay and D.Das,  
“Mössbauer and ac susceptibility studies on  $\text{Co}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$  nanoparticles”,  
**DAE Solid State Physics Symposium, 2003, Gwalior, India**
18. P.K.Chakrabarti, B.K.Nath, **Uday Kumar**, D.Das and P.K.Mukhopadhyay,  
“Mössbauer and ac susceptibility studies on cobalt zinc ferrite nano particles prepared by coprecipitation method”  
**International Conference on Nano Science and Technology (ICONSAT), 2003, Kolkata, 17-20 December 2003**
19. P.K.Chakrabarti, B.K.Nath, P. K.Jal, S.Das, **Uday Kumar**, P.K.Mukhopadhyay and D.Das,  
“Preparation of nanocrystalline nickel-zinc-copper ferrite and its characterization by Mössbauer spectroscopy and ac susceptibility”  
**Condensed Matter Days, 2003, Jadavpur University, Kolkata, 29-31 August 2003**

20. A. V. Deshpande, **Uday Kumar**, R. R. Panhalkar,  
“Spectroscopic behaviour of Rh-6G and Rh-B impregnated Sol-Gel solids”  
**International conference on photochemistry (ICP XX), Moscow, Russia (2001)**
21. A. V. Deshpande, R. R. Panhalkar, **Uday Kumar**,  
“Photophysical properties of C-47 and C-307 embedded Sol-Gel glasses”  
**International conference on photochemistry (ICP XIX), Durham, North Carolina, USA, (1999)**
22. A. V. Deshpande, **U. K. Singh**, “Spectroscopic properties of Rh-B in Sol-Gel host”  
**Proceedings of National Laser Symposium, IIT, Kanpur, India, 141 (1998)**