

## Dr. Ayan Mitra, M.Sc., Ph.D.



### ❖ Personal Details

Sex- Male

Date of Birth: 15.05.1990

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- ❖ **Current Position: Assistant Professor (Stage 1), Department of Physics, City College, 102/1 Raja Rammohan Sarani, Kolkata-700009. (Under Calcutta University).**

### ❖ Educational qualifications:

Course	University
<b>B.Sc. (Physics, Hons.), 2011</b>	The University of Burdwan
<b>M.Sc. in Physics with (special paper: Solid state Physics). 2013</b>	The University of Burdwan
<b>Ph.D., Physics, Studies of structural, magnetic, ferroelectric and microwave absorption properties of some multiferroics in bulk and nano regime, 2019</b>	The University of Burdwan

### ❖ Previous working experience:

Sl. No.	Post	College, University and Organisation	Department	Duration
1	Assistant Professor	RCCIIT, MAKAUT	Physics	3 months
2	Assistant Professor	The Heritage College, Calcutta University.	Physics	4 years
3	Guest Lecturer	Kalyani University	Physics	2 years
4	Guest Teacher	Bankura University	Physics	6 months

### ❖ Area of expertise and Research Interest:

- ❖ Condensed Matter Physics
- ❖ Magnetism and magnetic materials
- ❖ Strongly correlated systems

- ❖ Multiferroic nanocomposite systems
- ❖ Doped multiferroics
- ❖ Nanocrystalline spinel ferrites for device applications
- ❖ Spintronic materials
- ❖ Bio-functionalized Materials for Medical applications
- ❖ Dilute Magnetic Systems
- ❖ Dilute Magnetic Dielectric
- ❖ Microwave absorption property
- ❖ Carbon nanotubes and reduced graphene oxide
- ❖ First principle density functional theory calculation (DFT).

❖ **Publications:**

1. **A. Mitra**, A. S. Mahapatra, A. Mallick, A. Shaw, N. Bhakta, P. K. Chakrabarti. **Ceramics International 44 (2018) 4442–4449**. [Improved magneto-electric properties of LaFeO<sub>3</sub> in La<sub>0.8</sub>Gd<sub>0.2</sub>Fe<sub>0.97</sub>Nb<sub>0.03</sub>O<sub>3</sub>].
2. **A. Mitra**, A. S. Mahapatra, A. Mallick, A. Shaw, M. Ghosh, P.K. Chakrabarti. **Journal of Alloys and Compounds 726 (2017) 1195-1204**. [Simultaneous enhancement of magnetic and ferroelectric properties of LaFeO<sub>3</sub> by co-doping with Dy<sup>3+</sup> and Ti<sup>4+</sup>].
3. **A. Mitra**, A. S. Mahapatra, A. Mallick, P.K. Chakrabarti. **Journal of Magnetism and Magnetic Materials 435 (2017) 117–125**. [Enhanced microwave absorption and magnetic phase transitions of nanoparticles of multiferroic LaFeO<sub>3</sub> incorporated in multiwalled carbon nanotubes (MWCNTs)].
4. **A. Mitra**, A. S. Mahapatra, A. Mallick, P. K. Chakrabarti. **Journal of Magnetism and Magnetic Materials 424 (2017) 388–393**. [Room temperature magnetic ordering, enhanced magnetization and exchange bias of GdMnO<sub>3</sub> nanoparticles in (GdMnO<sub>3</sub>)<sub>0.70</sub>(CoFe<sub>2</sub>O<sub>4</sub>)<sub>0.30</sub>].
5. **A. Mitra**, A. Shaw, P. K. Chakrabarti. **Materials Chemistry and Physics 240 (2020) 122242**. [Microstructure, dielectric, ferroelectric and magnetoelectric coupling of a novel multiferroic of [(GdMnO<sub>3</sub>)<sub>0.7</sub>(CoFe<sub>2</sub>O<sub>4</sub>)<sub>0.3</sub>]<sub>0.5</sub>[TiO<sub>2</sub>]<sub>0.5</sub> nanocomposite].
6. **A. Mitra**, A. Shaw, P. K. Chakrabarti. **Advanced Powder Technology 31 (2020) 2469-2479**. [Structural transformation induced enhanced multiferroicity in Al<sup>3+</sup> and Ti<sup>4+</sup> co-doped LaFeO<sub>3</sub>].
7. **A. Mitra**, A. Shaw, Jean-Marc Greneche, P.K. Chakrabarti. **Materials Science & Engineering B, 273 (2021)115454**. [Structural, magnetic, electric and hyperfine behavior of a new multiferroic nanocomposite (Ni<sub>0.5</sub>Zn<sub>0.5</sub>Fe<sub>2</sub>O<sub>4</sub>)<sub>0.5</sub>(TiO<sub>2</sub>)<sub>0.5</sub>]
8. C.C. Dey, S. Sadhkan, **A. Mitra**, M. Dalal, A. Shaw, A. Bajerok, P.K. Chakrabarti. **ACS Applied Materials & Interfaces, 2021, <https://doi.org/10.1021/acsami.1c10241>** [Magnetic Energy Morphing, Capacitive Concept for Ni<sub>0.3</sub>Zn<sub>0.4</sub>Ca<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub>

- Nanoparticles embedded in Graphene Oxide Matrix and Studies of Wide-Band Tunable Microwave Absorption.]
9. Sukhendu Sadhukhan, **Ayan Mitra**, Abhik S. Mahapatra, Chandi Charan Dey, Souvick Das, Pabitra K. Chakrabarti, **Journal of Magnetism and Magnetic Materials** **559 (2022) 169553**. [Magnetolectric multiferroicity in a newly derived nanocomposite system of  $(Y_{0.97}Al_{0.03}FeO_3)_x((Bi_{0.5}Na_{0.5})_{0.94}Ba_{0.06}TiO_3)_{(1-x)}$  [ $x = 0.3, 0.5$ ]]
  10. Souvick Das, **Ayan Mitra**, Sukhendu Sadhukhan, Amitabh Das, Souvik Chatterjee, Pabitra K. Chakrabarti, **Advanced Powder Technology** **33 (2022) 103622**. [Spin reorientation behavior and enhanced multiferroic properties of co-doped  $YFeO_3$  towards a monophasic multiferroic ceramic  $Co_{0.05}Y_{0.95}Fe_{0.95}Ti_{0.05}O_3$ ].
  11. Sukhendu Sadhukhan, Abhik S. Mahapatra, **Ayan Mitra**, Pabitra K. Chakrabarti, **Journal of Alloys and Compounds** **907 (2022) 164443**. [Multiferroic properties and magnetolectric coupling observed in nanocrystalline  $HoFeO_3$ ].
  12. N. Bhakta, **A. Mitra**, A. Mallick, S. Sadhukhan, A. Bajorek, P.K. Chakrabarti. **Materials Science and Engineering B** **264 (2021) 114810**. [Rietveld analysis, enhanced magnetic, dielectric and ferroelectric properties of  $Gd^{3+}$  and  $Ti^{4+}$  co-doped  $LaFeO_3$  multiferroic]
  13. Nupur Bhakta, Sukhendu Sadhukhan, Chandi Charan Dey, **Ayan Mitra**, Pabitra K. Chakrabarti. **Journal of Magnetism and Magnetic Materials** **564 (2022) 170208**. [Investigation of magneto-electric properties of  $La_{0.85}Nd_{0.15}Fe_{0.9}Ti_{0.1}O_3$ ].
  14. Sukhendu Sadhukhan, Abhik S. Mahapatra, **Ayan Mitra**, Nupur Bhakta, Souvick Das, Ayan Mallick, Anupam Banerjee, Souvik Chatterjee, J. M. Greneche, Pabitra K. Chakrabarti. **Applied Physics A** (2023) **129:68** <https://doi.org/10.1007/s00339-022-06345-8>. [Strong modulation effects on magnetolectric behavior of Co-ferrite nanoparticles incorporated in ZnO medium in nano-regime synthesized in chemical routes].
  15. Sukhendu Sadhukhan, **Ayan Mitra**, Abhik S. Mahapatra, Pabitra K. Chakrabarti, **Journal of Alloys and Compounds** **956 (2023) 170351**. [Room temperature multiferrocity of hexagonal  $LuFeO_3$  and its enhancement by co-doping in  $Lu_{0.9}Co_{0.1}Fe_{0.9}Ti_{0.1}O_3$  nanoparticle system].
  16. Sukhendu Sadhukhan, **Ayan Mitra**, Abhik S. Mahapatra, Pabitra K. Chakrabarti, **Journal of Magnetism and Magnetic Materials** **579 (2023) 170861**. [Enhanced multiferrocity  $Ho_{0.95}Co_{0.05}Fe_{0.95}Ti_{0.05}O_3$  by co-doping in  $HoFeO_3$  nanoparticle system]

17. Souvick Das, Sukhendu Sadhukhan, **Ayan Mitra**, Chandi Charan Dey, P.K. Chakrabarti. **Materials Science and Engineering B** **297 (2023) 116720**. [Hopping conduction of localized polarons with scaling behaviour in ceramic composite  $(YCrO_3)_{1-x}(CoFe_{1.6}Cr_{0.4}O_4)_x$ ].
18. A. S. Mahapatra, **A. Mitra**, A. Mallick, A. Shaw, J. M. Greneche, and P. K. Chakrabarti. **Journal of Alloys and Compounds** **743 (2018) 274**. [Modulation of magnetic and dielectric property of  $LaFeO_3$  by simultaneous doping with  $Ca^{2+}$  and  $Co^{2+}$ -ions,].
19. A. S. Mahapatra, **A. Mitra**, A. Mallick, A. Shaw, P.K. Chakrabarti. **Materials Research Bulletin** **102 (2018) 226**. [Enhanced magnetic and ferroelectric relaxor property of  $BaTiO_3$  in the composite phase of  $(BaTiO_3)_{0.70}(Li_{0.3}Zn_{0.4}Fe_{2.3}O_4)_{0.30}$ ].
20. A. S. Mahapatra, **A. Mitra**, A. Mallick, P. K. Chakrabarti. **Materials Letters**, **169 (2016) 160-163**. [Enhanced magnetic property and phase transition in  $Ho^{3+}$  doped  $LaFeO_3$ ].
21. A. S. Mahapatra, **A. Mitra**, A. Mallick, P. K. Chakrabarti. **Ceramics International** **42 (2015) 3826–3835**. [XRD, HRTEM, magnetic, dielectric and enhanced microwave reflection loss of  $GaFeO_3$  nanoparticles encapsulated in multi-walled carbon nanotubes].
22. A. Shaw, **A. Mitra**, S.D. Kaushik, V. Siruguri, P.K. Chakrabarti. **Journal of Magnetism and Magnetic Materials** **488 (2019) 165338**. [Realization of spin-canted magnetism from lattice site specific spin structure in the double perovskite  $Nd_2CoTiO_6$ ].
23. A. Mallick, A. S. Mahapatra, **A. Mitra**, J. M. Greneche, R. S. Ningthoujam, P. K. Chakrabarti. **Journal of Applied Physics** **123 (2018) 055103**. [Magnetic properties and bio-medical applications in hyperthermia of lithium zinc ferrite nanoparticles integrated with reduced graphene oxide].
24. B. J. Sarkar, M. Dalal, **A. Mitra**, J. Mandal, A. Bandyopadhyay, P. K. Chakrabarti. **Journal of Alloys and Compounds** **752 (2018) 448-454**. [Room temperature antiferromagnetic ordering in chemically prepared nanocrystalline Co-doped neodymium oxide  $(Nd_{1.90}Co_{0.10}O_{3-\delta})$ ].
25. A. Mallick, A. S. Mahapatra, **A. Mitra**, P. K. Chakrabarti. **Journal of Magnetism and Magnetic Materials** **416 (2016) 181–187**. [Soft magnetic property and enhanced microwave absorption of nanoparticles of  $Co_{0.5}Zn_{0.5}Fe_2O_4$  incorporated in MWCNT].
26. M. Dalal, A. Mallick, A. S. Mahapatra, **A. Mitra**, A. Das, D. Das, P. K. Chakrabarti. **Materials Research Bulletin**, **76 (2016) 389-401**. [Effect of cation distribution on the magnetic and hyperfine behaviour of nanocrystalline Co doped Ni-Zn ferrite  $(Ni_{0.4}Zn_{0.4}Co_{0.2}Fe_2O_4)$ ].

❖ List of Participation in Seminar, Conference and Workshop

1. **A. Mitra**, A. Shaw, S. Sadhukhan, S. Das, P. K. Chakrabarti.

**Condensed Matter Days 2018 (CMDAYS18), Department of Physics, The University of Burdwan.**

[Enhanced magnetic, dielectric and ferroelectric properties of  $\text{La}_{0.9}\text{Er}_{0.1}\text{FeO}_3$ ].

2. **A. Mitra** and P. K. Chakrabarti.

**International workshop on Advanced materials (IWAM-2017), National Institute of Science & Technology Palur Hills, Berhampur761008, Odisha, India.**

[Magnetoelectric properties of  $\text{Ho}^{3+}$  and  $\text{Ti}^{4+}$  co-doped  $\text{La}_{0.9}\text{Ho}_{0.1}\text{Fe}_{0.9}\text{Ti}_{0.1}\text{O}_3$ ].

3. B. J. Sarkar, **A. Mitra**, J. Mandal, A. S. Mahapatra, P. K. Chakrabarti,

**National Thematic Workshop on Recent Advances in Materials Sciences, (2016), The University of Burdwan.**

[XRD, Raman and magnetic studies on chemically prepared nanocrystalline  $\text{Nd}_{1.90}\text{Co}_{0.10}\text{O}_{3-\delta}$  annealed in vacuum].

4. K. Mukhopadhyay, A.S. Mahapatra, A. Mallick, **A. Mitra**, N. Bhakta, P.K. Chakrabarti.

**National Thematic Workshop on Recent Advances In Materials Sciences (2016), UGC-DAE, Kolkata Centre and Department Of Physics, The University of Burdwan, Golapbag, Burdwan.**

[Enhanced magneto-electric property of Co substituted nanocrystalline  $\text{LaFeO}_3$  [ $\text{La}_{(1-x)}\text{Co}_x\text{FeO}_3$ ,  $x= 0, 0.05$ , and  $0.10$ ]].

5. K. Mukhopadhyay, A. S. Mahapatra, **A. Mitra**, P. K. Chakrabarti.

**Accepted in International Conference on Magnetic Materials and Applications 2014 (ICMAGMA-2014) Department of Physics, Pondicherry University in association with MSI (India).**

[Modulated magneto-dielectric property and exchange bias effect of Zn substituted  $\text{LaFeO}_3$  ( $\text{La}_{0.50}\text{Zn}_{0.50}\text{FeO}_3$ )].