DESHBANDHU COLLEGE
(UNIVERSITY OF DELHI)
KALKAJI, NEW DELHI - 110019
Faculty Details Proforma for College Website

Title	Dr	First Name	Amit	Last Name	Choudhary	Photograph
Designation		Assistant Professor				
Address		Fat No. 51, NPL Apartments, Block-H3, Vikas Puri, New Delhi-110018				
Phone No. Office						
Residence		9873511663				
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Email		achoudhary@db.du.ac.in, amitnpl2005@gmail.com				
Web-Page						

Educational Qualifications		
Degree	Institution	Year
Ph.D.(Submitted)	Department of Physics and Astrophysics, University of Delhi, Delhi, India	2010
PG	C.C.S. University, Meerut	2004
UG	C.C.S. University, Meerut	2002
Senior Secondary	C.B.S.E	1999
Any other qualification	GATE	2005

Career Profile

More than Eight years teaching experience in the Department of Physics, Deshbandhu College (University of Delhi), Kalkaji Delhi-110019.
Post-Doctoral Research Associate:- College of Optometry, University of Missouri, St. Louis, Missouri 63121, U.S.A.

Administrative Assignments

Areas of Interest/Specialization

- **Photolithography Technique (for electro-optical Liquid Crystal characterization)**
- **Electro-optical Techniques (Optical Microscopy, dielectric spectroscopy, UV-visible spectroscopy)**
- **Fabrication of memory devices by using Ferroelectric Liquid Crystals**
- **Synthesis and Characterization of Gold Nanoparticles using citrate reduction method**
- **Computer Programming in MATLAB, Material Studio, Abalone for proteins and soft materials, origin.**

Subjects Taught

Solid State Physics	Mechanics	Digital Electronics	Elements of modern physics
Waves and Optics	Electricity and magnetism		

Research Guidance

Publications Profile

Patent Status:

Patent: "**Optical Memory Device Based On DHFLC Material and Method of Preparing the Same**".

Inventers: J. Prakash, A. Kumar, **A. Choudhary**, A. Malik, I. Coondoo, A. M. Biradar.

Place of filing: USA**.**

International Publication Number: US20120140127A1.

Date of publication**:** 2012-06-07.

International Publication Number: US8994911B2 **.**

Date of publication: 31/03/2015**.**

Place filing: World Intellectual Property Organization (WIPO), Patent Corporation Treaty (PCT);

Application Number: WO2010109316A1

Date of publication: 30/09/2010

Place of Filing: South Korea

Application Number: KR20120003000A

Date of Application: 2012-01-09

Date of Grant: 31/01/2017

Date of Publication: KR101700922B1

Place of filing: India

Application number: IN625/DEL/2009

Status: Under filing process.

https://patents.google.com/patent/US20120140127A1/en?q=(ferroelectric+liquid+crystal)&inventor=Biradar&before=priority:20191115&after=priority:19990101

List of publications in international/national journals (SCI):

1) *Electric field dependence of optical dispersion process in short pitch ferroelectric liquid crystal*
Amit Choudhary, Ambika Bawa, Anil K. Thakur, Lokesh K. Gangwar, Suraj Kumar, Surinder P. Singh, and Ashok M. Biradar
***Optical Materials*, 102, 109771 (2020).**

2) *Partially unwound helical mode in surface stabilized ferroelectric liquid crystal geometry*
Sidra Khan, Jai Prakash, Shikha Chauhan, **Amit Choudhary**, and Ashok M. Biradar, ***Journal of Molecular Liquids***, 305, 112767 (2020).

3) *Bismuth ferrite nanoparticles for modulation of helical structure at the interface of ferroelectric liquid crystal and substrate*
Sidra Khan, Jai Prakash, Shikha Chauhan, **Amit Choudhary**, and Ashok M. Biradar ***J. Appl. Phys.*** 127, 074102 (2020).

4) *Impact of twisted alignment on the smectic layer structure of ferroelectric liquid crystal*
Ambika Bawa, Tarundeep K. Lamba, **Amit Choudhary**,* Gautam Singh, Rajesh, Surinder P.Singh, Ashok M. Biradar
***Journal of Molecular Liquids*, 302**, 112332 (2020).

5) *Low frequency dielectric processes in deformed helix ferroelectric liquid crystals*
Ambika Bawa, **Amit Choudhary***,Anil K. Thakur, Suraj Kumar, Rajesh, Surinder P. Singh, and Ashok M. Biradar
***Applied Physics A*, 126,** 171 (2020).

6) *Ferroelectric ordering at interface of paraelectric phase of liquid crystal and solid substrate in confined geometry*
S. Kumar, L.K. Gangwar, **A. Choudhary***, Rajesh, S.P. Singh, and A.M. Biradar ***Applied Surface Science*** 496, 143695 (2019). I.F.-5.1

7) *Probing the impact of carbon quantum dots on partially unwound helical mode in ferroelectric liquid crystals*
Lokesh K. Gangwar, Aditya Kumar, Gautam Singh, **Amit Choudhary**,* Rajesh, Surinder P. Singh, and Ashok M. Biradar,

***J. Appl. Phys.* 125**, 125108 (2019). I.F.-2.366

8) [Review Article] *Conjugation of Nanomaterials and Nematic Liquid Crystals for Futuristic Applications and Biosensors*
Amit Choudhary, Thomas F. George, and Guoqiang Li

***Biosensors*, 8**, 69; doi:10.3390/bios8030069 (2018). I.F. 3.5

9) *Collective dielectric process at the transition temperature of the SmC* and SmA* phase in a ferroelectric liquid crystal*
L.K. Gangwar, A. Bawa, **A. Choudhary***, S. P. Singh, and A. M. Biradar

Phys. Rev. E, 97, 062707 (2018) I.F.-2.366

10) *Polarization dependent dielectric process in Ferroelectric Liquid crystal*
A. Bawa, L.K. Gangwar, A. Dhingra, **A. Choudhary***, Rajesh, S. P. Singh, and A. M. Biradar

Liquid Crystals, 46, 166-175 (2018). I.F.- 2.66

11) *Dielectric behaviour of neutrophil gelatinase associated lipocalin detected by alpha relaxation process*
Mukta Tyagi, , **Amit Choudhary,** Santosh K. Upadhyay, Ved Varun and A. M. Biradar ***Integrated Ferroelectrics,*** 184, 55 (2017). IF-0.457,

Issue 1: The International Conference on Technologically Advanced Materials (ICTAM-2016), Part I

12) *Dielectric relaxation process of partially unwound helical structure in ferroelectric liquid crystals,*
Amit Choudhary, A. Bawa, Rajesh, S. P. Singh and A. M. Biradar,

***Phys Rev. E* 95,** 062702 (2017). IF-2.366

13) *Dielectric and electro-optical properties of Mn12-acetate and ferroelectric liquid crystal composite,*
Shilpi Verma, **Amit Choudhary***, Priti Singh, Ashok M. Biradar, and Surinder P. Singh,

Liquid Crystals, Vol 44, 464-472 (2017). IF- 2.661

14) *Probing the dynamics of geometrically confined ferroelectric mesogens at the air interface*
Achu Chandran, **Amit Choudhary,*** Pankaj Singh, D. Haranath, and Ashok M. Biradar.

Soft Matter, 11, 749 (2015). IF- 3.798

15) *Ananlysis of nanoparticles induced vertical alignment of nematic liquid crystals*
A. Choudhary, Thomas F. George, and G. Li, arXiv:1510.08166 [physics,optics], (2015).

16) *Investigations on the triboelectric electricity generation and its application in energizing a voltage driven display device*
A. Kumar, **A. Choudhary**, A. Saxena, A. P. S. Gahlot, G. Berwal, Rohit, S. Kumar, S. J. Tiwari, D. P. Singh, D. Agrawal, V. Kumar and V. Upreti.

DU Journal of Undergraduate Research and Innovation 1 (1) (2015) 49-59 **ISSN** 2395 - 2334.

17) *Anisotropic shift of surface plasmon resonance of gold nanoparticles doped in nematic liquid crystal,*
Amit Choudhary and Guoqiang Li.

Optics Express, **22**, 24348 (2014). IF- **3.337**

18) **[Review article]** *Advances in gold nanoparticles-liquid crystal composites*
A. Choudhary, Gautam Singh, and A. M. Biradar
***Nanoscale* 6**, 7743 (2014). IF- **7.233**

19) *Mechanism of homeotropic alignment of ferroelectric liquid crystals doped with ferro-flu and applications*

T. Joshi, Shri Singh, **A. Choudhary***, R. P. Pant, and A. M. Biradar

Appl. Phys. Lett. **103** 034110 (2013). IF-**3.495**

20) *Gold-Nanoparticle-Decorated Boron Nitride Nanosheets: Structure and Optical Properties*
Sunil K. Singhal , Veeresh Kumar , K. Stalin , **Amit Choudhary,** Satish Teotia , Gade B. Reddy , Rakesh B. Mathur , Surinder P. Singh, and Renu Pasricha

Part. Part. Syst. Charact*. 30, 445 (*2013). IF-**4.384**

21) *Electro-optic studies in conventional and pure/ethanol mixed de Vries ferroelectric liquid crystals*
G. Singh, G. V. Prakash, **A. Choudhary**, and A. M. Biradar

Liq. Cryst., 39, 185 (2012). IF-3.07

22) *Effect of ZnO nanoparticles on smectic-C* smectic-A* phase transition in electroclinic liquid crystals*
A. Malik, **A. Choudhary**, and A. M. Biradar

J. Appl. Phys. 110, 064111 (2011). IF-2.3

23) *Effect of Graphene Oxide nanomaterial in Electroclinic Liquid Crystals*

A. Malik, **A. Choudhary**, A. M. Biradar, V.K. Singh, and N. K. Jain ***J. Appl. Phys***. 108, 124110 (2010). IF-2.3

24) *Triboelectric activation of ferroelectric liquid crystal memory devices*
A. Choudhary, T. Joshi, and A. M. Biradar,

Appl. Phys. Lett., 97, 124108 (2010).IF 3.5

25) *Field-induced transition from homeotropic to planar geometry in the Sm C* and SmA phase of electroclinic liquid crystal.*
Anu Malik, Indrani Coondoo, **Amit Choudhary** and Ashok M. Biradar

Philosophical magazine 90, 2733-2747 (2010), I.F:-1.95

26) *Anisotropic behaviour of water in Ferroelectric liquid crystal.*
G. Singh, **A Choudhary,** G. V. Prakash, and A. M. Biradar

***Phys. Rev. E* 81,** 051707 (2010). IF-2.36

27) *Homeotropic alignment of nematic liquid crystals with negative dielectric anisotropy*
Gautam Singh, Gaddam Vijaya Prakash, **Amit Choudhary**, and Ashok Manikrao Biradar.
***Physica B* 405**, 2118 (2010). I.F:-1.45

28) *Effect of Surface Anchoring on Optical Bistability in Deformed Helix Ferroelectric Liquid Crystal*
J. Prakash, **A. Choudhary**, D. S. Mehta, and A. M. Biradar
Mol. Cryst. Liq. Cryst. 511, 188 (2009). I.F. 0.633

29) *Dielectric and electro-optical studies of glycerol/ferroelectric liquid crystal mixture at room temperature*
A. Kumar, J. Prakash, **A. Choudhary**, and A. M. Biradar.

J. Appl. Phys. 105, 124101 (2009). IF.2.17

30) *Effect of carbon nanotubes on response time of ferroelectric liquid crystal*
J. Prakash, **A. Choudhary**, D. S. Mehta, and A. M. Biradar

Phys. Rev E, 80, 012701 (2009). IF-2.366

31) *Electrically tunable spatially variable switching in ferroelectric liquid crystal/water system*
A. Choudhary, I. Coondoo, Jai Prakash, K. Sreenivas, and A. M. Biradar

Appl. Phys. Lett. **94,** 174101 (2009). IF-3.5

32) *Enormous change in tilt angle and transition temperature of Sm C*- Sm A phase in electroclinic liquid crystal material.*
A. Choudhary, A. Kumar, S. Kaur, J. Prakash and A. M. Biradar

Jpn J. Appl. Phys. **48**, 050201, 2009. IF-1.3

33) *Enhancement of Ferro to paraelectric phase transition in Ferroelectric Liquid Crystal*
A Malik, **A. Choudhary**, J. Prakash, I. Coondoo, and A. M. Biradar.

J. Appl. Phys. **105**, 034105 (2009). IF-2.3

34) *Memory effect near transition temperature in Sm C phase in non-surface stabilized ferroelectric liquid crystals*
I. Coondoo, A. Malik, **A. Choudhary**, A. Kumar, and A. M. Biradar

J. Appl Phys **104**, 83525, (2008). IF-2.17

ISSN: 1089-7550

35) *Nonvolatile memory effect based on gold nanoparticles doped ferroelectric liquid crystal.*
J. Prakash, **A. Choudhary**, A. Kumar, D. S. Mehta, and A. M. Biradar.

Appl. Phys. Lett. **93**, 112904 (2008). IF-3.5

36) *Memory effect in weakly anchored surfaces of deformed helix ferroelectric liquid crystals*
J. Prakash, **A. Choudhary**, S. Kaur, D. S. Mehta, and A. M. Biradar

Phys. Rev. E, **78**, 021707 (2008)

37) *Effect of Smectic A temperature width on the soft mode in Ferroelectric Liquid Crystals*
A. Choudhary, S. Kaur, J. Prakash, K. Sreenivas, S. S. Bawa, and A. M. Biradar

J Appl. Phys **104**, 034105 (2008).

38) *Criticality of bistabiltiy phenomenon in Deformed Helix Ferroelectric Liquid Crystal*
J. Prakash, D. S. Mehta, **A. Choudhary**, S. Kaur, V. Rathore, and A. M. Biradar

J Appl. Phys**, 103**, 44103 (2008).

39) *Molecular relaxation in homeotropically aligned ferroelectric liquid crystals*
G. Singh, G. V. Prakash, S. Kaur, **A. Choudhary**, and A. M. Biradar

Physica B, **403**, 3314 (2008).

40) *Enhanced electro-optical properties in gold nanoparticles doped FLC*

S. Kaur, S. P. Singh, A. M. Biradar, **A. Choudhary**, and K. Sreenivas

***Appl Phys. Lett*. 91**, 023120 (2007).

41) *Reminiscence shown by de Vries Electroclinic liquid crystal.*
G. Singh, **A. Choudhary**, S. Kaur, A. M. Biradar, and W. Haase

***Jpn J Appl. Phys*. 46**, L559 (2007).

42) *Memory effect in Sm C* phase of electroclinic liquid crystal*
A. Choudhary, S. Kaur, G. Singh, J. Prakash, A. K. Thakur, and A. M. Biradar

J Appl. Phys* 101**, 074112 (2007). ***ISSN: 1089-7550

43) *A dielectric mode in electroclinic liquid crystals*
A. K. Thakur, **A. Choudhary**, S. Kaur, S. S. Bawa, and A. M. Biradar

***J Appl. Phys*. 100**, 034104 (2006). *ISSN:* 1089-7550

44) *Is Curie-Weiss Law valid in every ferro to para transition?*
S. Kaur, A. K. Thakur, **A. Choudhary**, S. S. Bawa and A. M. Biradar, S. Annapoorni

***Appl. Phys. Lett,* 87**, 102507, (2005).

ISSN: 1077- 3118

Note: * Corresponding Author

Conference Organization/ Presentations/Schools

1. International Conference on Liquid Crystals (ICLC-2006), Department of Physics, University of Mumbai, Mumbai.
"Memory Effect in Smectic C* phase of ferroelectric liquid crystals"

Amit Choudhary, G. Singh, J. Prakash, S. Kaur and A. M. Biradar

2. 21st International Liquid Crystal Conference
Keystone, Colorado; USA July 2-7, 2006.

"Possibility of a new dielectric mode near the transition temperature of Sm C-Sm A phase in Electroclinic Liquid Crystal Matreials."*

S. Kaur, A. K. Thakur, **A. Choudhary**, S. S. Bawa and A. M. Biradar.

3. International Conference on Liquid Crystal

Dept of Physics, University of Mumbai Dec 4-7, 2006.

"Memory Effect in Sm C phase of Ferroelectric Liquid Crystal"*

A. Choudhary, S. Kaur, G. Singh and A. M. Biradar.

4. 18th Annual General Meeting,

Materials Research Society of India (MRSI), Feb 12-14, 2007

"*Capabilities of Optical storage in FLCs*"

S. Kaur, G. Singh, **A. Choudhary** and A. M. Biradar.

5. 18th Annual General Meeting,

Materials Research Society of India (MRSI), Feb 12-14, 2007.

"Electroclinic Liquid Crystal: material for Photonic devices."

A. Choudhary, S. Kaur, G. Singh, A. M. Biradar and K. Sreenivas

6. 14th National Conference on Liquid Crystals

Department of Physics, University of North Bengal, Siliguri, West Bengal December 17-19, Dec 2007.

Dynamics of bistability in deformed helix ferroelectric liquid crystal ***A. Choudhary***, J. Prakash, D. S. Mehta, and A. M. Biradar

Best ORAL Presentation Award "Dewan Jawhar Lal Nayer Memorial Prize" by Liquid Crystal Society of India

7. Multifunctional Nanosturctures and Nanomaterials Applications (MNNA)-2007
Department of Physics and Astrophysics, University of Delhi, Delhi, India

19th Dec-21st Dec 2007

Transverse Optical switching in Ferroelectric Liquid Crystal

J. Prakash, D.S. Mehta, **A. Choudhary**, S. P. Singh, K. Sreenivas and A. M. Biradar

8. International Liquid Crystal Conference (ILCC 2008)
ICC Jeju, Jeju Island, South Korea

29th June- 4th July, 2008

Effect of surface anchoring on optical bistability in deformed helix ferroelectric liquid crystal

J. Prakash, **A. Choudhary**, D. S. Mehta, and A. M. Biradar

9. 15th National Conference on Liquid Crystal
Indian Institute of Science, Bangalore, India

13th Oct. – 15th Oct. 2008

Optical field gradient in water doped ferroelectric liquid crystal.

A. Choudhary, K. Sreenivas, and A. M. Biradar.

Page 47 in Proceeding

10. 15th National Conference on Liquid Crystal
Indian Institute of Science, Bangalore, India

13th Oct. – 15th Oct. 2008

Memory devices based on nanoparticles doped ferroelectric liquid crystal J.

Prakash**, A. Choudhary**, D. S. Mehta, and A. M. Biradar

Page 81 in proceeding

11. 16th National Conference on Liquid Crystal
University of Lucknow, Lucknow, India

26th Oct. – 28th Oct. 2008

Conducting polymer finds an application in the realization of ferroelectric liquid crystal based memory devices

A. Malik, J. Prakash**, A. Choudhary**, and A. M. Biradar

Page 107 in proceeding

12. International Conference on Optics and Photonics (ICOP-2009)
CSIO, Chandigarh.

30th Oct. – 01st Nov. 2009.

Enrichment of electro-optical properties in ferroelectric liquid crystal

A. Choudhary, I. Coondoo, A. Malik, P.Goel and A. M. Biradar.

13. India-Japan Workshop On Biomolecular Electronics & Organic Nanotechnology for Environment Preservation
17-20 Dec 2009

Department of science and Technology Center on biomolecular electronics, NPL, New Delhi

Enhancement in optical transmission intensity and tuning of transmission spectrum in gold nanoparticles doped ferroelectric liquid crystals.

G. Singh, **A. Choudhary**, I. Coondoo, A. Malik, P. Goel and A. M. Biradar

14. SPIE Photonics West, San Fransisco, USA,
21-26 Jan 2012,

Analysis of nanoparticles in controlling the vertical alignment of nematic liquid crystals

A. Choudhary and G. Li

15. International conference on technologically advanced materials and Asian meeting on ferroelectricity (ICTAM-AMF 10) University of Delhi and Society of technologically advanced materials of India (STAMI),
07-11, November 2016.

16. 3rd International Conference on Nanostructured Materials and Nanocomposites (ICNM-2015), Hindustan College of Science and Technology, Agra – Delhi Highway (NH # 2), Farah (Mathura) U P 28 11 22 , India.
"Low frequency dielectric relaxation dynamics induced by ammonia in dodecyl- benzene-sulphonic acid doped polyaniline nanocomposites"

Jitendra Kumar, Amit Choudhary, and S. P. Singh.

17. Inspire program (DST) conducted by Deshbandhu College (University of Delhi) Kalkaji, 2017.
18. Career advancement Program organized by Rajdhani College, University of Delhi, Delhi, 2018.

19. International conference on physics, society and technology 2019, (ICPST-2019), Department of Physics, Deshbandhu College, University of Delhi, New Delhi-110019 Venue of Conference: Conference Centre, University of Delhi, Delhi-110007. 17-19, Jan 2019.

    Dielectric relaxation behaviour of circular alignment in ferroelectric liquid crystal material

    Amit Choudhary and Ashok M. Biradar

Book Chapters

Chapter in Book/online:

Following is the list of articles published online in the form of chapters for the syllabus **BSc. (Hons) Physics Sem II** by Institute of Life Long Learning, University of Delhi, Delhi in 2014: ISSN: **2349-154X**

1) Dielectric materials and capacitors,
2) Polarization, and
3) Method of electric images

http://vle.du.ac.in/mod/resource/view.php?id=10740

4) **Chapter:- Surface plasmon-induced variation in the properties of gold nanoparticle-doped nematic liquid crystals**
   Amit Choudhary, Thomas F. George, and Guoqiang Li

   Book title:- Surface Plasmon Resonance (SPR), Advances in Research and Applications

   Editor:- Douglas Howell

Nova Science Publishers, Inc. 400 Oser Avenue, Suite 1600, Hauppauge, New York 11788 USA.

ISBN:- 978-153611-896-4 (eBook)

Research Projects (Minor Grants/Research Collaboration)

1) '*Impact of climate change on various Physical Parameters of weather in a highly polluted area versus relatively pollution free area-DBC-206*' (Minor) funded by University of Delhi, Delhi, for under graduate student in Deshbandhu College, Kalkaji, New Delhi-110019.

   PI's:- Dr. Pankaj Singh (Physics), Dr. Rajender Kumar (Botany), **Dr. Amit Choudhary (Physics)**, Ms Priyanka (Physics)

Awards and Distinctions

1) **SRF-CSIR** Apr 01, 2008 to Feb 2011, National Physical Laboratory, New Delhi-110012, India (2008)
2) **Project Assistant- DST (2004)** 05th Nov 2004 to Mar 2008 2011, National Physical Laboratory, New Delhi-110012, India
3) **Dewan Jawahar Lal Nayyer Memorial Prize (2007)** given to PhD scholar by Liquid Crystal Society of India, Bangalore, India.

Association With Professional Bodies

Life time member of Indian Liquid Crystal Society, Bangalore,

Other Activities

- **University Observer** in undergraduate examinations for distance learning programs conducted by Delhi University through School of Open Learning, Delhi University during ***2012-13, 2013-14 and 2014-15***.
- **Resource Person** in Inspire Programme funded by Department of Science and Technology (DST) India during **2012-13, 2013-14** held in Deshbandhu College, Delhi University.

Signature of Faculty Member