

**DEPARTMENT OF
PHYSICS**

ABOUT THE DEPARTMENT



DR. M. NARAYAN
Ph.D
Associate Professor



DR. M. NARAYAN
Ph.D
Associate Professor

FACULTY

PROFILE AND ACCOMPLISHMENTS SO FAR

EDUCATIONAL QUALIFICATIONS :
B.Sc. (Mumbai, 1988), M.Sc. (Mumbai, 1990), Ph.D. (Madras, 1999)

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:
Member of the Board of Studies in Physics at University of Mumbai
Member of ISTE (Indian Society for Technical Education)

Member of the Board of Studies in Physics at Ramnarain Ruia College (Autonomous)

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.):
Phenomenological Consequences of Neutrino masses and Oscillations. Effect on Solar, Atmospheric and Long Baseline experiments. Connecting neutrino parameters to Gravity via

effective Planck operators. Possible signals of CPT violations in neutrino Physics.

PUBLICATIONS (PEER REVIEWED) SO FAR: 29
PATENTS : NA
CONFERENCE PROCEEDINGS/PAPERS: NA
SEMINARS/LECTURES/ ORATIONS DELIVERED: 05
PH.D.S AWARDED AS SINGLE/ CO-GUIDE: NA
MASTERS AWARDED AS SINGLE/ CO-GUIDE: NA
H-INDEX : 10
CITATIONS: 350

SUBJECTS TAUGHT DURING 2016-17:

Under Graduate		
Subject	Class	Sem.
General Physics Lab.	F. Y. B. Tech.	II
Post Graduate		
Subject	Class	Sem.
Quantum Mechanics I & II	M. Sc. (Physics)	I & II
Classical Mechanics	M. Sc. (Physics)	I
Molecular Quantum Mechanics & Group Theory	M. Sc. (Physics)	III

RESEARCH INTERESTS:
Theoretical High Energy Physics, Molecular dynamics, Chemical Engineering Thermodynamics.

RESEARCH STUDENTS CURRENTLY WORKING:
P.D.F.- RA -

Ph.D. (Tech.) -
Ph.D.(Sc) - 02
M.Tech. -
M.Chem.Eng -
M.Sc - , Others (if any) -

RESEARCH PUBLICATIONS:
International- 26

National- 03
Peer-reviewed- Conference proceeding- Books-
PATENTS:
International - 0
Indian - 0

SPONSORED PROJECTS:Government- 0
Private- 0**PROFESSIONAL
ACTIVITIES (MEMBERSHIP
OF IMPORTANT****COMMITTEES):**Member of the Board of Studies
in Physics at University of
MumbaiMember of ISTE (Indian
Society for Technical

Education)

SPECIAL AWARDS/HONORS:**UNDERGRADUATE
STUDENTS' SEMINARS/
PROJECTS/HOME PAPERS :****SEMINARS**

No.	Name of the Student (Beginning with Last name)	Topic
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PROJECT / HOME PAPER

No.	Name of the Student (Beginning with Last name)	Topic
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**POST GRADUATE STUDENTS' SEMINARS/PROJECTS (NAME OF STUDENT, PREVIOUS
INSTITUTE, TITLE) :****SEMINARS**

No.	Name of the Student (Beginning with Last name)	Topic
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RESEARCH PROJECTS**PH.D. (TECH)**

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
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PH.D. (SCIENCE)**M. TECH. / M.CHEM. ENG.**

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
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M.SC. (CHEMISTRY)(BY RESEARCH)

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
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**POST DOCTORAL/PH.D. STUDENTS' RESEARCH PROJECTS (NAME OF STUDENTS,
PREVIOUS INSTITUTE, TITLE) :**

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
1	Kasturirangan Siddharth	University of Mumbai	x-ray spectroscopy of highly charged ions & plasma	Dr. Mohan Narayan

2	Ghoderao Pradnya Prabhakar	University department of Physics, University of Pune	Advanced cubic equations of state for fluids and fluid mixtures.	Dr. Mohan Narayan
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DETAILS OF SPONSORED PROJECTS: Government and Private (name of sponsor, title of project,
duration, grant, principal investigator/co-investigators, names of research fellows)

I. Government Agencies:	
Sponsor	
Title	
Duration	
Total amount	
Principal Investigator	
Research Fellows	
II. Private agencies:	
Sponsor	
Title	
Duration	
Total amount	
Principal Investigator	
Research Fellows	

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS:**PUBLICATIONS:**

No.	Title and authors	Journal	Vol. No.	Pages	Year
1.	Correction to Neutrino Mass Square Difference in the Co-Bimaximal Mixings due to Quantum Gravity BS Koranga, M Narayan	International Journal of Theoretical Physics	56 (11)	3508 - 3513	2017

PATENTS :

No.	Inventors	Title	Country	Funding agency
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BOOK AND BOOK CHAPTERS :

No.	Author(s)	Title	Publisher	Place	Year
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BOOK CHAPTER:

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
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GENERAL PUBLICATIONS:

MEMBERSHIP OF IN-HOUSE COMMITTEES : UGPC & PGPC Member of TA ICT.

SEMINARS/LECTURES/CONFERENCES/SYMPOSIA/WORKSHOPS/SUMMER OR WINTER

**TRAINING SCHOOLS
ATTENDED/ORAL OR
POSTER PRESENTATIONS :
EVENTS ORGANIZED :**

1. Nanomaterials:
Emerging Trends on 16 -17
Sept. 2016 Under TEQIP
2. 2 Plasma Processing of

Materials on 21st Sept. 2016
Under TEQIP
**INDUSTRIAL
CONSULTANCY :**

**DETAILS OF POST-GRADUATE/PH.D. STUDENTS WHO PASSED OUT (NAME, COURSE,
TITLE OF PROJECT) :**

Name	Course	Title
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Major accomplishments :

**Photograph (self) softcopy.* :
Photograph (laboratory) (soft
copy) (with names). * :
Group photograph with research
students (soft copy). *:
Any other relevant additional
information. *:**

**BRIEF CAREER PROFILE
UPTO 200 WORDS:**

Basic training and research work
including post-doctoral work in

Theoretical High Energy Physics.
Mainly on Neutrino Physics
and related phenomenology.
Also developed constraints on
low scale gravity models which
are one of the approaches of
addressing what is known as the
“hierarchy” problem.
Since the last few years
investigating certain aspects
of Chemical Engineering
Thermodynamics with the
aim of developing better

equations of state (EOS) to
fit thermophysical data and
more efficient mixing rules to
be applied to fluid mixtures.
This is in collaboration with
Dr. V. H. Dalvi from Chemical
Engineering department. We
have already developed a new
Cubic EOS with four parameters
which works very well for pure
fluids and also well for mixtures
which is now published.



PROFESSOR. R. R. DESHMUKH

*B.Sc. (Pune, 1991), M.Sc. (N. M. U. Jalgaon, 1994),
B.Ed. (Mumbai, 1995) Ph.D. (Mumbai, 2002)*
Professor of Physics

**FELLOWSHIPS/ MEMBER-
SHIPS OF PROFESSIONAL
BODIES:**

- General Advisory
Committee for Research
and Liaison of Bombay
Textile Research Association
(BTRA), LBS Marg,
Ghatkopar (W), Mumbai –
400 086

- Advisory Committee
member of International
conference on materials and
characterization techniques
held during Dec 14-16 at
VIT, Vellore, India.
- Member, Board of Studies in
Physics, BATU, Lonere
- Research Recognition
Committee, BATU, Lonere.
- Member, Expert Committee
in Physics, Nagpur
University, Nagpur.
- Membership of Editorial
Boards with name of journal
and agency:
International J of Materials
Science and Applications,
Science Publishing Group,
USA.

- International J of Chemical
and Physical Sciences.
- Member UGPC / PGPC,
ICT
- Academic Council, ICT
- Member HOD Council, ICT

**HIGHLIGHTS OF RESEARCH
WORK DONE AND IT'S
IMPACT (MAXIMUM TWO
SINGLE-SPACED PAGES
WITH FIGURES/DIAGRAMS
ETC.):**

**(A) Plasma Processing of
Polymeric materials:**

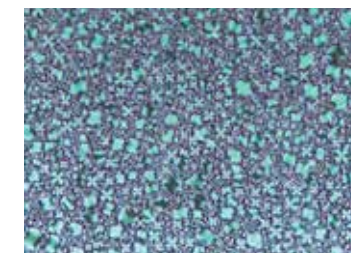
Low temperature plasma
has attracted attention of
Scientist and Researchers to
convert inexpensive polymer
in to a valuable product.
Since the temperature of
RF and DC glow discharge
plasma is just around room
temperature, it is the most
suitable technique to modify
most of the polymer surfaces,
without affecting their bulk
properties. Plasma is a one-
step dry process, it does not
require disposal of polluted
water like wet chemistry.
Therefore it is environment
friendly and has many
other advantages over
other processes of surface
modification. One can
control plasma chemistry
just by controlling plasma
process parameters suitably.
It is possible to attach
certain functional groups
such as Hydroxyl, Carboxyl,
carbonyl, amine etc on nano
particles or onto the polymer
surfaces for further use in
biomedical applications.
Plasma functionalized
nano particles can form

covalent bonding in polymer
composites, thus enhancing
its mechanical and thermal
properties. It is also possible
to make super hydrophobic
surfaces using fluorocarbon
plasma. Polymers having
low surface energy have
poor adhesion properties,
can be subjected to plasma
treatment to enhance these
properties. Our group at
Physics Department has
successfully shown that
gaseous plasma treatment
can enhance surface energy
of polymers and textile
materials. Polymer surface
activation have opened
window for pervaporation
membranes. Plasma
processing can also be used
for functionalization of
nano materials for various
applications.

**(B) Polymer Dispersed Liquid
Crystals.**

Liquid crystals are familiar
as the basis of the multi-
billion dollar flat panel
display industry. Over the
years, liquid crystal research
has transformed into a
truly interdisciplinary area.
Liquid crystal displays
(LCDs) are experienced in
most portable electronic
equipments, large display
systems, photonics devices
etc. due to the inherent
optical anisotropy of LCs,
it has attracted attention in
exploring the unique electro-
optical effect of the polymer
/ LC composite film. At
UICT, we are working in the
area of polymer dispersed
liquid crystal (PDLC)
composite films. We have

productively studied the
electro-optical properties
for different compositions of
polymers, their co-polymers
and different nematic liquid
crystals. We showed that the
electro-optical properties
help us to select the proper
composition for their use in
displays, light shutters, and
in non-display applications
also. We have systematically
carried out the temperature
dependence of these
properties and the results
help us to apply them in the
field of temperature sensors.



Liquid crystal display
technology would benefit
from reduced switching
times and driving
voltages. For this purpose,
very recently we have
demonstrated the potential
of dichroic dye-doped
PDLC (DPDLC) films.
Novel concepts involved
in photopolymerization
and opto-electronic
behavior of DPDLCs have
been explored. We have
succeeded in optimizing dye
content in these devices to
obtain promising materials
with minimum threshold
and high contrast for display
applications without the use
of polarizers.
Future research may see the

advent of exploring Polymer Stabilized liquid crystal devices, phase modulators, optical retarders, twisted LC devices, using ferroelectric, antiferroelectric, bent-core nematics etc. The research would also be focused on developing improved LC alignment for liquid crystal

display device applications.
PUBLICATIONS (PEER REVIEWED) SO FAR: 92 / 6 book chapters
PATENTS: 01
CONFERENCE PROCEEDINGS/PAPERS : 01
SEMINARS/LECTURES/ ORATIONS DELIVERED: 02

PH.D.S AWARDED AS SINGLE/ CO-GUIDE: 05
MASTERS AWARDED AS SINGLE/ CO-GUIDE: 04
H-INDEX : 20
CITATIONS: 1529

SUBJECTS TAUGHT DURING 2016-17 OR 2017-18:

UNDER GRADUATE

Subject	Class	Sem.
General Physics Laboratory	F. Y. B. Chem. Engg.	I
General Physics Laboratory	F. Y. B. Tech.	II
Applied Physics I	F. Y. B. Chem. Engg.	I
Applied Physics I	F. Y. B. Tech.	I
Applied Physics II	F. Y. B. Chem. Engg.	II
Applied Physics II	F. Y. B. Tech.	II

POST GRADUATE

Subject	Class	Sem.
Analytical Techniques I	M. Sc. (Physics)	II
Analytical Techniques II	M. Sc. (Physics)	III
Physical Methods of Analysis	M. Tech	
Instrumental Methods of Analysis	M. Sc. (Text. Chemistry)	

RESEARCH INTERESTS :
 Plasma Technology, Polymer Physics, Functionalization of nanoparticles, Molecular tailoring of surfaces using plasma for biomedical applications, textile physics, Electro-optical properties of Polymer Dispersed Liquid Crystals, Polymer nano – composite materials, Dissociation of the dye molecule using photoelectron chemical method.

RESEARCH STUDENTS

CURRENTLY WORKING :
 P.D.F. - RA -
 Ph.D. (Tech.) -
 Ph.D. (Sc) - 02
 M. Tech. -
 M. Chem. Eng -
 M.Sc -
 Others (if any) -

RESEARCH PUBLICATIONS:
 International-
 National-
 Peer-reviewed-
 Conference proceeding-
 Books-

PATENTS:

International -
 Indian -

SPONSORED PROJECTS:

Government-
 Private-

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

SPECIAL AWARDS/ HONOURS:

UNDERGRADUATE STUDENTS' SEMINARS/ PROJECTS/HOME PAPERS :

SEMINARS

No.	Name of the Student (Beginning with Last name)	Topic
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PROJECT / HOME PAPER

No.	Name of the Student(Beginning with Last name)	Topics
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POST GRADUATE STUDENTS' SEMINARS/PROJECTS (NAME OF STUDENT, PREVIOUS INSTITUTE, TITLE) :

SEMINARS

No.	Name of the Student(Beginning with Last name)	Topic
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RESEARCH PROJECTS

PH.D. (TECH)

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
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PH.D. (SCIENCE) M. TECH. / M.CHEM. ENG.

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M.SC. (CHEMISTRY)(BY RESEARCH)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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POST DOCTORAL/PH.D. STUDENTS' RESEARCH PROJECTS (NAME OF STUDENTS, PREVIOUS INSTITUTE, TITLE) :

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
1	Singh Ravi	University department of physics, University of Mumbai	Synthesis and characterization of plasma functionalized polymer Nano composites	Dr. R. R. Deshmukh
2	Trimukhe Ajinkya Mahadev	University of Mumbai	Functionalization of materials by plasma processing synthesis and characterization of polymer nano composites for bio medical applications	Dr. R. R. Deshmukh

3	Nimbekar Ashish	University of Mumbai	Synthesis and characterization of different polymeric composites using various methods and their applications	Dr. R.R. Deshmukh
4	Ambre Manoj G.		Preparation of Naural Fibres Reinforced Composite Particles separates from cotton	Dr. R.R. Deshmukh
5	Kambli Nishant Digamber		Extraction of fibres from Cornhusk (Maize Cob Sheath) and its Applications in Textiles	Dr. R.R. Deshmukh

DETAILS OF SPONSORED PROJECTS-

Government and Private (name of sponsor, title of project, duration, grant, principal investigator/co-investigators, names of research fellows)

Government Agencies:	
Sponsor	DST-MoFPI
Title	Studies in Physico-Chemical Properties of Plasma Processed Rice grains
Duration	2 years
Total amount	20 lakhs 18 thousand
Principal Investigator	Dr. R. R. Deshmukh
Research Fellows	
Private agencies:	
Sponsor	Universal Starch-Chem Allied Ltd.
Title	Studies in Synthesis of Biodegradable Polymer
Duration	4 years
Total amount	20.18 lakhs
Principal Investigator	Dr. R. R. Deshmukh
Research Fellows	

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS:

Dr. K. Navneetha Pandiyaraj, Dept. of Physics, SSIET, Coimbatore.

Dr. VarshaKelkar - Mane, Department of Bio-tech, University of Mumbai.

Professor N.V. Bhat, BTRA.

Mumbai.

Professor R. Dabrowski, Institute of Chemistry, Military University of Technology, Wrsaw 00-908, Poland.

Professor R. B. Timmons, University of Texas, Arlington, USA.

Professor U. S. Annapure, ICT, Mumbai.

PUBLICATIONS:

No.	Title and authors	Journal	Vol. No.	Pages	Year
1	Influence of cold plasma on the enzymatic activity in germinating mung beans (Vigna radiate) S Sadhu, R Thirumdas, RR Deshmukh, US Annapure	LWT-food Science and Technology	78,	97-104	2017
2	Influence of cold plasma on fungal growth and aflatoxins production on groundnuts Y Devi, R Thirumdas, C Sarangapani, RR Deshmukh, US Annapure	Food Control	77,	187-191	2017
3	Functional and rheological properties of cold plasma treated rice starch R Thirumdas, A Trimukhe, RR Deshmukh, US Annapure	Carbohydrate polymers	157,	1723-1731	2017
4	Fumed SiO ₂ nanoparticle reinforced biopolymer blend nanocomposites with high dielectric constant and low dielectric loss for flexible organic electronics K Deshmukh, MB Ahamed, KK Sadasivuni, D Ponnamma, ...	Journal of Applied Polymer Science		134 (5)	2017
5	Solution-processed white graphene-reinforced ferroelectric polymer nanocomposites with improved thermal conductivity and dielectric properties for electronic enca... K Deshmukh, MB Ahamed, KK Sadasivuni, D Ponnamma, RR Deshmukh, ...	Journal of Polymer Research,	24 (2)	27	2017
6	Graphene oxide reinforced poly (4-styrenesulfonic acid)/polyvinyl alcohol blend composites with enhanced dielectric properties for portable and flexible electronics K Deshmukh, MB Ahamed, KK Sadasivuni, D Ponnamma, ...	Materials Chemistry and Physics		186, 188-201	2017
7	Eonomer 200F®: A High-Performance Nanofiller for Polymer Reinforcement— Investigation of the Structure, Morphology and Dielectric Properties of Polyvinyl Alco... K Deshmukh, MB Ahamed, RR Deshmukh, KK Sadasivuni, D Ponnamm, ...	Journal of Electronic Materials			2017
8	Polyvinyl alcohol (PVA)/polystyrene sulfonic acid (PSSA)/carbon black nanocomposite for flexible energy storage device applications MK Mohanapriya, K Deshmukh, K Chidambaram, MB Ahamed, ...	Journal of Materials Science: Materials in Electronics,		1-13	2017

9	Plasma surface modification of biomaterials for biomedical applications AM Trimukhe, KN Pandiyaraj, A Tripathi, JS Melo, RR Deshmukh	Advances in Biomaterials for Biomedical Applications,		95-166	2017
10	Impact of low-pressure glow-discharge-pulsed plasma polymerization on properties of polyaniline thin films AA Jatrakar, JB Yadav, RR Deshmukh, HC Barshilia, V Puri, RK Puri	Physica Scripta	91 (12),	125501	2016
11	Influence of low pressure cold plasma on cooking and textural properties of brown rice R Thirumdas, C Saragapani, MT Ajinkya, RR Deshmukh, US Annapure	Innovative Food Science & Emerging Technologies	37,	53-60	2016
12	Graphene oxide reinforced polyvinyl alcohol/polyethylene glycol blend composites as high-performance dielectric material K Deshmukh, MB Ahamed, KK Sadasivuni, D Ponnamma, RR Deshmukh,	Journal of Polymer Research	23 (8),	159	2016
13	Effect of low temperature plasma on the functional properties of basmati rice flour R Thirumdas, RR Deshmukh, US Annapure	Journal of food science and technology	53(6)	2742-2751	2016

PATENTS :

No.	Inventors	Title	Country	Funding agency
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BOOK AND BOOK CHAPTERS :

BOOK CHAPTER:

No.	Author(s)	Title	Editor	Publisher	Place	Year	Page
1	R. R. Deshmukh, A. M. Trimukhe, K.N.Pandiyaraj, A. Tripathi	Advances in Biomaterials for Biomedical Applications (Plasma surface modification of biomaterials for biomedical)	A. Tripathi, J. S. Melo	Springer		2017	
2	R. R. Deshmukh, K. Deshmukh, G. M. Joshi, A. Sharma, S. Arora, R. Tibrawala, S. Kalinathan	Functionalized Engineering Materials and their Applications (Study of Morphology and Electrical Properties of Pure and Hybrid Polymer Composites)	S. Thomas, N. Kalarikkal, Pious C. V., Z. Ahmad, J. T. Haponiuk	CRC Press		2016	
3	R. R. Deshmukh, K. Deshmukh, M. B. Ahmad, S. K.K. Pasha, P. R. Bhagat, K.Chidambaram,	Biopolymer Composites in Electronics (Biopolymer Composites with High Dielectric Performance: Interface Engineering)	K. K. Sadasivuni, D. Ponnamma, John-John	Elsevier Publisher		2016	

4	R. R. Deshmukh	Liquid Crystalline Polymers: Volume 2--Processing and Applications (Electro-optic and Dielectric Responses in PDLC Composite Systems)		Springer		2015	
5	N. V. Bhat R. R. Deshmukh	Plasma Technologies for Textile & Apparel (Plasma processing of textiles to enhance their dyeing and surface properties)	S.K. Nema, P.B. Jhala	Woodhead Publishing	India	2014	
6	N. V. Bhat, R. R. Deshmukh	Textile Dyeing (Pre-treatments of Textiles Prior to Dyeing: Plasma Processing)	Ira S. Krull, Sebastiano D'Amico	Intech Publisher		2012	

GENERAL PUBLICATIONS:

MEMBERSHIP OF IN-HOUSE COMMITTEES :

SEMINARS/LECTURES/ CONFERENCES/SYMPOSIA/ WORKSHOPS/SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/

ORAL OR POSTER PRESENTATIONS:

EVENTS ORGANIZED :
Nanomaterials: Emerging Trends on 16 -17 Sept. 2016 under TEQIP
Plasma Processing of Materials on 21st Sept. 2016 under TEQIP

INDUSTRIAL CONSULTANCY :

DETAILS OF POST-GRADUATE/PH.D. STUDENTS WHO PASSED

OUT (NAME, COURSE, TITLE OF PROJECT):

Name	Course	Title
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MAJOR ACCOMPLISHMENTS:

PHOTOGRAPH (SELF) SOFTCOPY.*:

PHOTOGRAPH (LABORATORY) (SOFT COPY) (WITH NAMES). *:

GROUP PHOTOGRAPH WITH RESEARCH STUDENTS (SOFT COPY). *:

ANY OTHER RELEVANT ADDITIONAL INFORMATION. *:

BRIEF CAREER PROFILE UPTO 200 WORDS:

Dr. Deshmukh joined ICT (formerly known as UDCT) as an Assistant Professor in 1996. Currently he is working as a Professor of Physics and Controller of Examinations

in the Institute of Chemical Technology (ICT), Matunga, Mumbai,
He has completed M. Sc Physics from North Maharashtra University, Jalgaon (INDIA) in 1994 and Ph.D. from University of Mumbai in 2002. The title of the Ph.D. Thesis is: "Studies in Plasma Processing of Polymers and Their Applications".

He has visited University of Maryland under TEQIP for three months in 2007. He was a **Post-Doctoral Fellow** at the University of Texas, Arlington (USA) from February 2009 to March 2010. His research interest are Plasma Technology, Polymer Physics, Functionalization of nano-

particles. Molecular tailoring of surfaces using plasma for biomedical applications, textile physics, PECVD, thin films, Electro-optical properties of Polymer Dispersed Liquid Crystals. Polymer nano composites materials.

His Skills and expertise

- Surface Analysis: FTIR, XPS, SEM, contact angle, AFM,
- Plasma Enhanced Chemical Vapor Deposition (PECVD)
- Polymer etching
- X-ray diffraction, DSC,
- High vacuum systems
- Dielectric studies

He has been working on various committees with in the institute and out side the institute



DR. (MRS.) V. D. DESHPANDE

M.Sc. (Delhi, 1978), M.Phil. (Delhi, 1980), Ph.D. (Delhi, 1986)

Professor

PROFILE AND ACCOMPLISHMENTS SO FAR:

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

HIGHLIGHTS OF RESEARCH WORK DONE AND IT'S IMPACT (MAXIMUM TWO SINGLE-SPACED PAGES

WITH FIGURES/DIAGRAMS ETC.):

PUBLICATIONS (PEER REVIEWED) SO FAR: 23

PATENTS: 01

CONFERENCE PROCEEDINGS/PAPERS: 03

SEMINARS/LECTURES/

ORATIONS DELIVERED: 01

PH.D.S AWARDED AS SINGLE/ CO-GUIDE: 07

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 05

H-INDEX : 06

CITATIONS: 87

SUBJECTS TAUGHT DURING 2016-17:

UNDER GRADUATE		
Subject	Class	SEM.
Applied Physics I	F. Y. B. Chem. Engg.	I
Applied Physics I	F. Y. B. Tech.	I
Colour Physics & Colour Harmony	S. Y. B. Tech.	IV
Colour Physics & Colour Harmony Lab	S. Y. B. Tech.	IV
POST GRADUATE		
Subject	Class	SEM.
Colour Science	M. Sc. (Physics)	IV

RESEARCH INTERESTS :

Polymer nanocomposites, Polymer blends: Crystallization kinetics, Mechanical and optical properties, study of dielectric behavior, Orientation behavior, structure-property relationship; Colour Physics: Colour assessment of dyed textiles; Assessment of the effect of the background on the colour perception; Polymer

embedded nano-drug delivery; background on the colour perception; Polymer embedded nano-drug delivery

RESEARCH STUDENTS CURRENTLY WORKING :

P.D.F- RA-

Ph.D. (Tech.)-

Ph.D.(Sc)- 05

M.Tech. - M.Chem.Eng -

M.Sc - Others (if any) -

RESEARCH PUBLICATIONS:

International- 05

National-

Peer-reviewed-

Conference proceeding- 04

Books-

PATENTS:

International -

Indian -

SPONSORED PROJECTS :

Government-

Private-

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT

COMMITTEES): SPECIAL AWARDS/ HONOURS:

UNDERGRADUATE STUDENTS' SEMINARS/ PROJECTS/HOME PAPERS :

SEMINARS:

No.	Name of the Student(Beginning with Last name)	Topic
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PROJECT / HOME PAPER:

No.	Name of the Student(Beginning with Last name)	Topic
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POST GRADUATE STUDENTS' SEMINARS/PROJECTS (NAME OF STUDENT, PREVIOUS INSTITUTE, TITLE):

SEMINARS

No.	Name of the Student(Beginning with Last name)	Topic
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RESEARCH PROJECTS

PH.D. (TECH)

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
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PH.D. (SCIENCE)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M. TECH. / M.CHEM. ENG.

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M.SC. (CHEMISTRY) (BY RESEARCH)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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POSTDOCTORAL/PH.D. STUDENTS' RESEARCH PROJECTS (NAME OF STUDENTS, PREVIOUS INSTITUTE, TITLE):

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
1	Dubey Satish Chandra	Jhunjhunwala college, Mumbai	Study of Paints and Their Coatings on various Substrates for Solar Thermal Applications	Prof. V. D. Deshpande
2	Gaonkar Amita	University of Mumbai	Morphological mechanical and thermal behavior of reorganized polyethylene terephthalate and its Nano composites	Prof. V. D. Deshpande

3	Murudkar Vrishali Vijaykumar	Pune University, Fergusson College.	“Physical and mechanical properties of polysiloxane Nano composites”	Prof. V. D. Deshpande
4	Singh Arvind R	University of Mumbai	Preparation of Polymer nanocomposites using Carbon nanotubes and surface modified Carbon nanotubes	Prof. V. D. Deshpande
5	Nikam Pravin		“Studies in polymer / metal oxide nanocomposites”	Prof. V. D. Deshpande

DETAILS OF SPONSORED PROJECTS – GOVERNMENT AND PRIVATE (NAME OF SPONSOR, TITLE OF PROJECT, DURATION, GRANT, PRINCIPAL INVESTIGATOR/CO-INVESTIGATORS, NAMES OF RESEARCH FELLOWS):

Government Agencies:	
Sponsor	BARC/DAE
Title	Development and characterization of selective coating for enhancement of radiation absorption of solar receivers
Duration	3 years
Total amount	1.2 crores
Principal Investigator	Prof. (Mrs.) V. D. Deshpande
Research Fellows	Mr. Satishchandra Dubey
Private agencies:	
Sponsor	
Title	
Duration	
Total amount	
Principal Investigator	
Research Fellows	

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS:

PUBLICATIONS:

No.	Title and authors	Journal	Vol. No.	Pages	Year
1	Morphology, crystallization and melting behaviour of poly(trimethylene terephthalate)/thermotropic liquid crystalline polymer blends, Deshpande V.D., Jape S.P.	Journal of Thermal Analysis and Calorimetry	128,3	1479-1493	2017

2	Dielectric relaxation and ac conductivity behavior of carboxyl functionalized multiwalled carbon nanotubes/poly (vinyl alcohol) composites, Amrin S., Deshpande V.D.	Physica E: Low-Dimensional Systems and Nanostructures	87	317-326	2017
3	Mechanical and dielectric properties of carbon nanotubes/poly (vinyl alcohol) nanocomposites, Amrin S., Deshpande V.D.	AIP Conference Proceedings	1728		2016
4	DC bias effect on alternating current electrical conductivity of poly(ethylene terephthalate)/ alumina nanocomposites, Nikam P.N., Deshpande V.D.	AIP Conference Proceedings	1728		2016
5	Comparison of dielectric properties of polydimethylsiloxane (PDMS) grafted polyacrylates/nano alumina and nano silica composites, Murudkar V.V., Gaonkar A.A., Deshpande V.D., Mhaske S.T.	AIP Conference Proceedings	1728		2016
6	Estimation of Hoffman-Lauritzen parameters from nonisothermal crystallization kinetics of PET/MWCNT nanocomposites, Gaonkar A., Murudkar V., Deshpande V.D.	AIP Conference Proceedings	1728		2016
7	Electrical properties and conduction mechanism in carboxyl-functionalized multiwalled carbon nanotubes/poly(vinyl alcohol) composites Amrin S., Deshpande V.D.	Journal of Materials Science	51,5	2453-2464	2016
8	Enhancement of solubility and stability of itraconazole by formation of solid crystal suspensions using hot melt extrusion, Pawar J., Gokarna V.S., Deshpande V.D., Amin P.D.	Pharmaceutical Engineering	36,2	69-71	2016
9	Processing and characterization of extruded PET and its r-PET and MWCNT nanocomposite thin films by spin coating, Singh A.R., Deshpande V.D.	Bulletin of Materials Science	39,1	167-175	2016

PATENTS :

No.	Inventors	Title	Country	Funding agency
-----	-----------	-------	---------	----------------

BOOK AND BOOK CHAPTERS :

No.	Author(s)	Title	Publisher	Place	Year
-----	-----------	-------	-----------	-------	------

BOOK CHAPTER:

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
-----	-----------	----------------------	--------	-----------	-------	------	------

GENERAL PUBLICATIONS: **SCHOOLS ATTENDED/ ORAL OR POSTER PRESENTATIONS :** 2. Plasma Processing of Materials on 21st Sept. 2016 Under TEQIP

MEMBERSHIP OF IN-HOUSE COMMITTEES :

SEMINARS/LECTURES/ CONFERENCES/SYMPOSIA/ WORKSHOPS/SUMMER OR WINTER TRAINING

EVENTS ORGANIZED : 1. Nanomaterials: Emerging Trends on 16 -17 Sept. 2016 Under TEQIP

INDUSTRIAL CONSULTANCY :

DETAILS OF POST-GRADUATE/PH.D. STUDENTS WHO PASSED OUT (NAME, COURSE, TITLE OF PROJECT) :

Name	Course	Title
------	--------	-------

MAJOR ACCOMPLISHMENTS : Group photograph with research students (soft copy). *: Photograph (self) softcopy.*: Any other relevant additional information. *: Photograph (laboratory) (soft copy) (with names). *:



DR. NEETU JHA

Ph.D
UGC Assistant Professor

PROFILE AND ACCOMPLISHMENTS SO FAR:

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:
i) Materials Research Society
ii) Society of Materials Chemistry

HIGHLIGHTS OF RESEARCH

WORK DONE AND ITS IMPART (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.):

1. Nanomaterial based fuel cell electrocatalyst:
Pt nanoparticles based catalyst supported on carbon nanostructures are synthesized and analyzed for its oxygen

reduction reaction (ORR) activity using electrochemical techniques. We are also looking at the effect of catalyst support on fuel cell performance. Change in property of catalyst support has been found to have a profound effect on the cell performance. Our research group deals with detailed study of the low temperature fuel cell electrocatalyst.

2. Graphene Synthesis using solar radiation

Graphene oxide is being synthesized at room temperature and ambient conditions using modified hummers method. Then natural source of light for rapid, chemical free and low temperature method is being used for high throughput production of graphene by exfoliation of graphite oxide was using focused solar radiation. The simple method of preparation holds promise for easy scalability of cost effectiveness for huge practical applications.

3. Carbon Based samples for heavy metal removal

SUBJECTS TAUGHT DURING:

Under graduate		
Subject	Class	Sem.
General Physics Laboratory	F. Y. B. Chem. Engg.	I
General Physics Laboratory	F. Y. B. Tech.	II
Post graduate		
Subject	Class	Sem.
Nanotechnology, Nanomaterials and Its Applications	M. Tech. Green Technology	
NanoScience	M.Sc. (Physics)	IV
General Physics Laboratory	M. Sc. (Physics)	I

RESEARCH INTERESTS : Carbon Nanotubes, Graphene, Fuel Cell electrocatalyst, Energy storage supercapacitors and Electrochemical Sensors

RESEARCH STUDENTS CURRENTLY WORKING :
Ph.D. (Tech.)- 1
Ph.D.(Sc)- 3
M.Tech.-1
M.Chem.Eng- 0

The adsorption of metal ions from aqueous solution has been studied with the variation in the degree of functionalization of the graphene samples. It was observed that increasing oxygen functionalities amplifies the uptake of metal ions.

4. Supercapacitor cells

Two electrode supercapacitor cells are fabricated using highly conducting and porous carbon nanomaterials for charge storage studies. Our research focus is on the development of carbon nanocomposites for increase in charge storage property. Capacitors are known to possess very high power density but it's energy density is limited. Hence along with the charge storage

we also focus on enhancing the energy density of capacitors.

PUBLICATIONS (PEER REVIEWED) SO FAR: 37

PATENTS: 04

CONFERENCE PROCEEDINGS/PAPERS: 10

SEMINARS/LECTURES/ ORATIONS DELIVERED: 00

PH.D.S AWARDED AS SINGLE/ CO-GUIDE: 01

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 06

H-INDEX :13, CITATIONS: 730

M.Sc- 0 Others (if any) -

RESEARCH PUBLICATIONS: International- 04

NUMBER OF PATENTS: International - Indian -

SPONSORED PROJECTS : Government- 4 Private-

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

SPECIAL AWARDS/ HONOURS:

UNDERGRADUATE STUDENTS' SEMINARS/ PROJECTS/HOME PAPERS :

POST GRADUATE STUDENTS' SEMINARS/PROJECTS (NAME OF STUDENT, PREVIOUS INSTITUTE, TITLE) :

No.	Name of the Student(Beginning with Last name)	Topic
1	Goyal Pranav	Electrocatalyst for PEM Fuel Cell

RESEARCH PROJECTS:

PH.D. (TECH)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
1	Ahirrao Dinesh J.	North Maharashtra Jalgaon University	Development of Pseudocapacitors for Charge Storage	Dr. Neetu Jha

PH.D. (SCIENCE)

No.	Research Scholar	Previous Institution	Project	Supervisor
1	Mohanapriya K.	Anna University	Carbon based nanostructured materials for energy storage and capacitive deionization of water applications	Dr. Neetu Jha
2.	Kireeti Kumar	Nagajurn University	Development of nanomaterials based electrocatalyst for polymer electrolyte membrane fuel cell	Dr. Neetu Jha
3.	Shakeel Rahman	North Maharashtra Jalgaon University	Synthesis of CdSe quantum dot and its hybrid photocatalyst for hydrogen evolution from water under visible light	Dr. Neetu Jha
4.	Sukruta Pethe	University of Pune	Generation of Steam by Solar Energy Using Nanoparticles of Graphene Oxide and Applications of the same	Dr. Neetu Jha

M. TECH. (GREEN TECH)

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
1	Shital Rajwadkar	UDCT, Jalgaon	Determination of Arsenic using electrochemical method	Dr. Neetu Jha

M.SC. (CHEMISTRY) (BY RESEARCH)

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor

POSTDOCTORAL/ PH.D. STUDENTS' RESEARCH PROJECTS (NAME OF STUDENTS, PREVIOUS INSTITUTE, TITLE) :

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor

DETAILS OF SPONSORED PROJECTS – GOVERNMENT AND PRIVATE

GOVERNMENT AGENCIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Co-Principal Investigator	Research Fellows
DST Inspire	Development of Pt alloy based electrocatalyst for fuel cell	5 Yrs	35 Lakh	Dr. Neetu Jha		
DST Nanomission	Development of metal oxide graphene based supercapacitor	3 Yrs	25 Lakh 77 Thousand 6 hundred	Dr. Neetu Jha	Prof. A.B. Pandit	
SERB, Startup Grant for Young Scientist	Development of electrocatalyst support for fuel cell	3 Yrs	17 Lakh 40 Thousand	Dr. Neetu Jha		
BRNS, Young Scientist Research Award	Development of Carbon based nanocomposites for Supercapacitor	3 Yrs	11 Lakh 90 Thousand	Dr. Neetu Jha		

PRIVATE AGENCIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Co-Principal Investigator	Research Fellows

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS:

- Dr. Shubra Singh, Anna University, Tamil Nadu
- Dr. Ashish Mishra, B.H.U., UP.
- Dr. Shajumon M. M., IISER, Trivandrum.
- Prof. S. Ramaprabhu, IIT Madras, Chennai.

PUBLICATIONS

No.	Title and authors	Journal	Vol. No.	Pages	Year
1	Preparation of ZnO nanoribbon-MWCNT composite film and its application as antimicrobial bandage, antibacterial filter and thermal IR camouflage material Upasani P., Sreekumar T.V., Gaikar V.G., Jha N.	Bulletin of Materials Science	40,4	865-876	2017
2	Porous graphene sheets as positive electrode material for supercapacitor - Battery hybrid energy storage devices Mohanapriya K., Jha N.	AIP Conference Proceedings	1832		2017
3	Polyaniline-Manganese dioxide nanorods nanocomposite as an electrode material for supercapacitors, Ahirrao D.J., Jha N.	AIP Conference Proceedings	1832		2017
4	Wrinkled graphene - Carbon nanospheres composite for ultra high energy supercapacitors, Mohanapriya K., Jha N.	MRS Advances	2,7	381-387	2017
5	Synthesis and Characterization of Hexahapto-Chromium Complexes of Single-Walled Carbon Nanotubes, Kalinina I., Bekyarova E., Sarkar S., Itkis M.E., Niyogi S., Jha N., Wang Q., Zhang X., Al-Hadeethi Y.F., Haddon R.C.	Chemical synthesis and applications of graphene and carbon materials		87-114	2016
6	Solar light reduced Graphene as high energy density supercapacitor and capacitive deionization electrode, Mohanapriya K., Ghosh G., Jha N.	Electrochimica Acta	209	719-729	2016
7	Synthesis, characterization and application of γ -MnO ₂ /graphene oxide for the selective aerobic oxidation of benzyl alcohols to corresponding carbonyl compounds, Kadam M.M., Dhopte K.B., Jha N., Gaikar V.G., Nemade P.R.	New Journal of Chemistry	40,2	1436-1442	2016
8	A sodium modified reduced graphene oxide-Fe ₃ O ₄ nanocomposite for efficient lead(II) adsorption, Kireeti K.V.M.K., Chandrakanth G., Kadam M.M., Jha N.	RSC Advances	6,88	84825-84836	2016

PATENTS :

No.	Inventors	Title	Country	Funding agency

BOOK AND BOOK CHAPTERS :

No.	Author(s)	Title	Publisher	Place	Year

BOOK CHAPTER:

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page

GENERAL PUBLICATIONS:
MEMBERSHIP OF IN-HOUSE COMMITTEES:
SEMINARS/ LECTURES/ CONFERENCES/ SYMPOSIA/ WORKSHOPS/ SUMMER

OR WINTER TRAINING SCHOOLS ATTENDED/ ORAL OR POSTER PRESENTATIONS:
EVENTS ORGANIZED:
1 Nanomaterials: Emerging Trends on 16 -17 Sept. 2016

Under TEQIP
2 Plasma Processing of Materials on 21st Sept. 2016
Under TEQIP
INDUSTRIAL CONSULTANCY:

DETAILS OF POST-GRADUATE/PH.D. STUDENTS WHO PASSED OUT (NAME, COURSE, TITLE OF PROJECT)

Name	Course	Title

MAJOR ACCOMPLISHMENTS
Photograph (self) softcopy.*
Photograph (laboratory) (soft copy) (with names). *
Group photograph with research students (soft copy). *
Any other relevant additional information. *

BRIEF CAREER PROFILE UPTO 200 WORDS :
Dr. Neetu Jha obtained her Bachelor in Science degree in

Physics (Honors) from Calcutta University in 2002. This was followed by M.Sc(Physics) from Banaras Hindu University in 2004, with specialization in Spectroscopy. She obtained her PhD degree in Physics from Indian Institute of Technology Madras (IIT Madras) in 2009 with thesis titled "Development of Carbon based materials and its application in Direct Methanol Fuel cell, Nanofluids

and Biosensors". She joined University of California Riverside as Postdoctoral Researcher from Sep 2009 to Dec 2011 and joined Institute of Chemical Technology Mumbai in January 2012 as DAE-ICT Scientist A. In April 2013, she joined the same institute as DST Inspire faculty and July 2014 changed the position from DST Inspire Faculty to UGC Assistant Professor in Physics.



DR. ASHWIN MOHAN

Ph.D.

Assistant Professor

PROFILE AND ACCOMPLISHMENTS SO FAR:

- Educational qualifications: Ph.D
- Fellowships/ Memberships of Professional Bodies:

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS ETC.):
My research work has mainly

dealt with probing correlations between structure, magnetism, and thermal transport phenomena in fundamentally interesting and technologically promising classes of materials. Through my research work

I have contributed towards understanding of the above-mentioned aspects in transition metal oxides, particularly low-dimensional quantum magnets, where antiferromagnetically coupled spins are arranged in two-dimensional planar or one-dimensional ladder-like and chain-like geometries. I have investigated the synthesis, structure, and physical properties of single crystalline compounds like the one-dimensional spin-chain compounds, Sr_2CuO_3 , SrCuO_2 , $\text{Ba}_2(\text{Mn}, \text{Ni})(\text{PO}_4)_2$, the two-dimensional Heisenberg antiferromagnet La_2CuO_4 , the spin-ladder compound $\text{La}_8\text{Cu}_7\text{O}_{19}$, battery materials LiCoO_2 and LiNiO_2 , using solid-state synthesis, optical floating zone method, and various other microscopic and macroscopic measurement techniques in a wide range of temperature. In low-dimensional materials that exhibit large anisotropic thermal conductivity mediated by magnetic excitations, my research has shed light on the

relevant scattering mechanisms, over a large temperature range from 5 K to 800 K, that are responsible for heat conduction in such materials. These oxide materials, with their unconventionally large and novel thermal transport channel find use in heat dissipation applications in microprocessors. In this regard, the effect of external perturbations like impurity-induced disorder on magnetic excitations and their propagation was also looked at. These results have provided unprecedented information about scattering mechanisms and evidence of strong coupling between spin and lattice degrees of freedom in such materials. I have also investigated magnetic and electrical properties of rare-earth intermetallic shape memory alloys for their use in solid state refrigeration technology. Here, we have found substantially large magnetocaloric effect near room temperature for compounds doped in a controlled fashion for achieving tunability for

specific cooling applications. Recently, I have started work on synthesis of single-crystalline battery materials $\text{Li}(\text{Co}, \text{Ni})\text{O}_2$ with an aim to investigate the propagation of Li and O atoms through the bulk of the material and better understand the mechanism of charge transport in these technologically important materials. Future research will be directed towards investigating materials that have potential in generating clean energy from waste heat by means of the thermoelectric and pyroelectric effects.

PUBLICATIONS (PEER REVIEWED) SO FAR: 6

PATENTS: NA

CONFERENCE PROCEEDINGS/PAPERS: 4

SEMINARS/LECTURES/ORATIONS DELIVERED: 8

PH.D.S AWARDED AS SINGLE/ CO-GUIDE: NA

MASTERS AWARDED AS SINGLE/ CO-GUIDE: NA

H-INDEX : 03

CITATIONS: 42

SUBJECTS TAUGHT DURING 2016-17 :

Undergraduate		
Subject	Class	Sem.
Applied Physics I	F. Y. B. Chem. Engg. & F. Y. B. Tech	I
Applied Physics II	F. Y. B. Chem. Engg. & F. Y. B. Tech	II
Colour Physics Laboratory	S. Y. B. Tech.	IV
Post Graduate		
Subject	Class	Sem.
General Physics Laboratory	M. Sc. (Physics)	I

RESEARCH INTERESTS : Materials Physics, Functional materials, Magnetism and Transport phenomena, Material Synthesis, Single Crystal Growth

RESEARCH STUDENTS CURRENTLY WORKING :

P.D.F.- RA -
Ph.D. (Tech.) -
Ph.D.(Sc) -
M.Tech. -
M.Chem.Eng -
M.Sc -

Others (if any) -

RESEARCH PUBLICATIONS:

International- 03
National-
Peer-reviewed- 03
Conference proceeding-
Books-

PATENTS:

International -
Indian -

SPONSORED PROJECTS:

Government-
Private-

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

SPECIAL AWARDS/ HONOURS:

CSIR-NET, Marie Curie Fellowship

UNDERGRADUATE STUDENTS' SEMINARS/ PROJECTS/HOME PAPERS :

SEMINARS

No.	Name of the Student(Beginning with Last name)	Topic
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PROJECT / HOME PAPER

No.	Name of the Student(Beginning with Last name)	Topics
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POST GRADUATE STUDENTS' SEMINARS/PROJECTS (NAME OF STUDENT, PREVIOUS INSTITUTE, TITLE) :

SEMINARS

No.	Name of the Student(Beginning with Last name)	Topic
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RESEARCH PROJECTS

PH.D. (TECH)

No.	Research Scholar (Beginning with Last name)	Previous Institution	Project	Supervisor
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PH.D. (SCIENCE)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M. TECH. / M.CHEM. ENG.

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M.SC. (CHEMISTRY)(BY RESEARCH)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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POSTDOCTORAL/PH.D. STUDENTS' RESEARCH PROJECTS (NAME OF STUDENTS, PREVIOUS INSTITUTE, TITLE) :

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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DETAILS OF SPONSORED PROJECTS – GOVERNMENT AND PRIVATE (NAME OF SPONSOR, TITLE OF PROJECT, DURATION, GRANT, PRINCIPAL INVESTIGATOR/CO-INVESTIGATORS, NAMES OF RESEARCH FELLOWS):

GOVERNMENT AGENCIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Research Fellows

PRIVATE AGENCIES:

Sponsor	Title	Duration	Total amount	Principal Investigator	Research Fellows

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS:

Leibniz Institute for Solid State Research (IFW), Dresden, Germany

Tata Institute of Fundamental Research (TIFR), Mumbai

BARC, Solid State Physics Division, Mumbai

PUBLICATIONS:

No.	Title and authors	Journal	Vol. No.	Pages	Year
1	Magnetic structure of $\text{La}_8\text{Cu}_7\text{O}_{19}$, K, Prokeš, E. Ressouche, A. Mohan , A. U. B. Wolter, B. Buechner, C. Hess	Physical Review B	95	024405	2017
2	Magnetic ordering in the ultrapure site-diluted spin chain materials $\text{SrCu}_{1-x}\text{Ni}_x\text{O}_2$, G. Simutis, M. Thede, R. Saint-Martin, A. Mohan , C. Baines, Z. Guguchia, R. Khasanov, C. Hess, A. Revcolevschi, B. Buechner, A. Zheludev	Physical Review B	93	214430	2016
3	Single crystal growth of spin-ladder compound $\text{La}_8\text{Cu}_7\text{O}_{19}$ by the travelling-solvent floating zone method, A. Mohan , S. Singh, S. Partzsch, M. Zwiebler, J. Geck, S. Wurmehl, B. Buechner, C. Hess	Journal of Crystal Growth,	448,	21-28,	2016

PATENTS :

No.	Inventors	Title	Country	Funding agency

BOOK AND BOOK CHAPTERS :

No.	Author(s)	Title	Publisher	Place	Year

BOOK CHAPTER:

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page

GENERAL PUBLICATIONS:

MEMBERSHIP OF IN-HOUSE COMMITTEES :

SEMINARS/LECTURES/CONFERENCES/SYMPOSIA/WORKSHOPS/SUMMER OR WINTER

TRAINING SCHOOLS ATTENDED/ORAL OR POSTER PRESENTATIONS :

EVENTS ORGANIZED:

Two day workshop called “Nanomaterials: Emerging Trends” on 16th and 17th September, 2016 at ICT Mumbai

One day workshop on “Plasma Processing of Materails” on 21st September, 2016 at Mumbai

INDUSTRIAL CONSULTANCY :

DETAILS OF POST-GRADUATE/PH.D. STUDENTS WHO PASSED OUT (NAME, COURSE, TITLE OF PROJECT) :

Name	Course	Title

MAJOR ACCOMPLISHMENTS :

Photograph (self) softcopy.*

Photograph (laboratory) (soft copy) (with names). *

Group photograph with research students (soft copy). *

Any other relevant additional information. *

BRIEF CAREER PROFILE

UPTO 200 WORDS:

After obtaining my Masters’ degree in Solid State physics, I have been engaged in experimental efforts to synthesize and investigate physical properties of a range of functional materials typically in the single crystalline form. During PhD and postdoctoral

work, my focus was to understand correlations between structure, magnetism, and thermal transport phenomena from very low to very high temperatures in pure and doped transition metal oxide compounds. I have considerable experience in synthesizing single crystals of oxides and intermetallic compounds using the optical

floating zone and the flux methods, determining crystal structure using diffraction methods, and low-temperature property measurement techniques. My current research areas are aligned towards investigating cobaltate battery materials and double perovskite thermoelectric materials for harvesting clean energy.



DR. AWANEESH SINGH

Ph.D.

UGC Assistant Professor

PROFILE AND ACCOMPLISHMENTS SO FAR:

FELLOWSHIPS/ MEMBERSHIPS OF PROFESSIONAL BODIES:

HIGHLIGHTS OF RESEARCH WORK DONE AND ITS IMPACT (MAXIMUM TWO SINGLE-SPACED PAGES WITH FIGURES/DIAGRAMS

ETC.):

PUBLICATIONS (PEER REVIEWED) SO FAR: 23

PATENTS: 00

CONFERENCE PROCEEDINGS/PAPERS : 01

SEMINARS/LECTURES/ ORATIONS DELIVERED: NA

PH.D.S AWARDED AS

SINGLE/ CO-GUIDE: 00

MASTERS AWARDED AS SINGLE/ CO-GUIDE: 00

H-INDEX : 06

CITATIONS: 90

SUBJECTS TAUGHT DURING 2016-17:

Under graduate- Post graduate-

RESEARCH INTERESTS :

(1) Theory and computer simulations of multicomponent simple-fluids/polymer-blends/block-copolymers; (2) Pattern formation in nonequilibrium systems; (3) Computational design of smart materials; (4) Computational analysis of the following polymerization processes: (I) Atom Transfer Radical Polymerization (ATRP); (II) Free Radical Polymerization (FRP); (III) Photo-Controlled Radical Polymerization (Photo-CRP).

RESEARCH STUDENTS CURRENTLY WORKING :**SEMINARS:**

No.	Name of the Student(Beginning with Last name)	Topic
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PROJECT / HOME PAPER:

No.	Name of the Student(Beginning with Last name)	Topics
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POST GRADUATE STUDENTS' SEMINARS/PROJECTS (NAME OF STUDENT, PREVIOUS INSTITUTE, TITLE) :**SEMINARS**

No.	Name of the Student(Beginning with Last name)	Topic
-----	---	-------

RESEARCH PROJECTS**PH.D. (TECH)**

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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PH.D. (SCIENCE)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M. TECH. / M.CHEM. ENG.

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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M.SC. (CHEMISTRY) (BY RESEARCH)

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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POSTDOCTORAL/PH.D. STUDENTS' RESEARCH PROJECTS (NAME OF STUDENTS,

P.D.F- RA -
Ph.D. (Tech.) -
Ph.D.(Sc) -
M.Tech. -
M. Chem. Eng. -
M.Sc. -
Others (if any) -

RESEARCH PUBLICATIONS:

International- 03
National-
Peer-reviewed-
Conference proceeding-
Books-

NUMBER OF PATENTS:

International -
Indian -

NUMBER OF SPONSORED PROJECTS:
Government-
Private-

PROFESSIONAL ACTIVITIES (MEMBERSHIP OF IMPORTANT COMMITTEES):

SPECIAL AWARDS/HONOURS:

UNDERGRADUATE STUDENTS' SEMINARS/PROJECTS/HOME PAPERS :

PREVIOUS INSTITUTE, TITLE) :

No.	Research Scholar(Beginning with Last name)	Previous Institution	Project	Supervisor
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DETAILS OF SPONSORED PROJECTS -

Government and Private (name of sponsor, title of project, duration, grant, principal investigator/co-investigators, names of research fellows)

Government Agencies:	
Sponsor	
Title	
Duration	
Total amount	
Principal Investigator	
Research Fellows	
Private agencies:	
Sponsor	
Title	
Duration	
Total amount	
Principal Investigator	
Research Fellows	

DETAILS OF NATIONAL AND INTERNATIONAL COLLABORATIONS:**PUBLICATIONS**

No.	Title and authors	Journal	Vol. No.	Pages	Year
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PATENTS :

No.	Inventors	Title	Country	Funding agency
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BOOK AND BOOK CHAPTERS :

No.	Author(s)	Title	Publisher	Place	Year
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BOOK CHAPTER:

No.	Author(s)	Title of the chapter	Editor	Publisher	Place	Year	Page
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GENERAL PUBLICATIONS:**SCI Journal Articles**

1. **Effect of bond-disorder on the phase-separation kinetics of binary mixtures:** A Monte Carlo simulation study; Awaneesh Singh,

Amrita Singh, and Anirban Chakraborti; **Journal of Chemical Physics**, Vol. 147, (12) 124902 (2017). IF: 2.965

2. **Combining ATRP and FRP gels: soft gluing of polymeric materials for**

the fabrication of stackable gels; Antoine Beziau, Rafael N. L. de Menezes, Santidan Biswas, Awaneesh Singh, J. Cuthbert, Anna C. Balazs, Tomasz Kowalewski, Krzysztof Matyjaszewski;

Polymers (mdpi), Vol. 9, 186 (2017). (Featured article 2017) IF: 3.364

3. **Photo-regeneration of Severed Gel with Iniferter-mediated Photo-growth**; Awaneesh Singh, Olga Kuksenok, Jeremiah A. Johnson and Anna C. Balazs. **Soft Matter**, Vol. 13, 1978-1987 (2017). IF: 3.889

4. **Living Additive Manufacturing: Transformation of Parent Gels into Diversely Functionalized Daughter Gels Made Possible by Visible Light Photo-redox Catalysis**; Mao Chen, Yuwei Gu, Awaneesh Singh, Mingjiang Zhong, Alex Jordan, Santidan Biswas, LaShanda Korley, Anna C. Balazs, and Jeremiah A. Johnson. **ACS Central Science**, Vol. 3, 124-134 (2017). (Web highlight of the issue) IF: 7.939

Highlighted in the following news articles:

- **Technique enables adaptable 3-D printing** written by Anne Trafton <http://news.mit.edu/2017/technique-enables-adaptable-3-d-printing-0113>; Appears in MIT News; 13 Jan 2017.
- **MIT create adaptive 3D printing process using light** written by Corey Clarke <https://3dprintingindustry.com/news/mit-create-adaptive-3d-printing-process-using-light-103345/>; Appears in 3dprintingindustry.com;

16 Jan 2017.

• **Additive Manufacturing, 3D Printing Now Adapt Post-Production** written by William Mckinney <https://edgylabs.com/2017/01/26/additive-manufacturing-adaptable/>; Appears in edgylabs.com; 26 Jan 2017.

5. **Modeling the formation of layered, amphiphilic gels**; Santidan Biswas, Awaneesh Singh, Antoine Beziau, Tomasz Kowalewski, Krzysztof Matyjaszewski, and Anna C. Balazs; **Polymer (Elsevier)**, Vol. 111, 214-221 (2017). IF: 3.684

6. **Embedding Flexible Fibers into Responsive Gels to Create Composites with Controllable Dexterity**; Awaneesh Singh, Olga Kuksenok, and Anna C. Balazs; **Soft Matter**, Vol. 12, 9170-9184 (2016). (Considered for the Cover of the issue) IF: 3.889

Highlighted in the following article:

- **Handy gel grips chemists** written by Tom Wilson for **Chemistry world** <https://www.chemistryworld.com/1017615.article>; Appears in the Soft Matter blog; 9 Nov 2016.

7. **Miktoarm Star Copolymers as Interfacial Connectors for Stackable Amphiphilic Gels**; Antoine Beziau, Awaneesh Singh, Rafael N. L. de Menezes, Hangjun Ding,

Antonina Simakova, Olga Kuksenok, Anna C. Balazs, Tomasz Kowalewski, and Krzysztof Matyjaszewski; **Polymer (Elsevier)**, Vol. 101, 406-414 (2016). IF: 3.684

8. **Tailoring the Structure of Polymer Networks with Iniferter-Mediated Photo-Growth**; Awaneesh Singh, Olga Kuksenok, Jeremiah A. Johnson, and Anna C. Balazs; **Polym. Chem.** Vol. 7, 2955-2964 (2016). IF: 5.375

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9. Tailoring the Structure of Polymer Networks with Photo-Controlled Radical Polymerization; Awaneesh Singh, Olga Kuksenok, Jeremiah A. Johnson, Anna C. Balazs; **Bulletin of the American Physical Society** (2016).

10. Photo-Regeneration of Severed Gel Using Photo-Controlled Radical Polymerization; Awaneesh Singh, Olga Kuksenok, Jeremiah A. Johnson, Anna C. Balazs; **Bulletin of the American Physical Society** (2016).

11. Covalent Fusion of layered Incompatible Gels in Immiscible Solvents; Santidan Biswas, Awaneesh Singh, Krzysztof Matyjaszewski, Anna C. Balazs; **Bulletin of the American Physical Society** (2016).

MEMBERSHIP OF IN-HOUSE COMMITTEES :
SEMINARS/ LECTURES/ CONFERENCES/ SYMPOSIA/

WORKSHOPS/ SUMMER OR WINTER TRAINING SCHOOLS ATTENDED/ ORAL OR POSTER

PRESENTATIONS :
EVENTS ORGANIZED :
INDUSTRIAL CONSULTANCY :

DETAILS OF POST-GRADUATE/PH.D. STUDENTS WHO PASSED OUT (NAME, COURSE, TITLE OF PROJECT) :

Name	Course	Title
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MAJOR ACCOMPLISHMENTS :
EARLY CAREER RESEARCH AWARD (2017/2018)

FILE NUMBER:
ECR/2017/002529

Photograph (self) softcopy.*

Photograph (laboratory) (soft copy) (with names).*

Group photograph with research students (soft copy).*

Any other relevant additional information.*

BRIEF CAREER PROFILE
UPTO 200 WORDS:

My research interests broadly focus on the field of soft matter physics. I explore the current challenging problems in this area using a combination of analytical, experimental, and numerical techniques such as phenomenological field theoretical modeling¹⁻⁵, Monte Carlo (MC)^{1,6}, molecular dynamics (MD)⁷⁻⁹, dissipative particle dynamics (DPD) simulations¹⁰⁻¹⁴, and gel lattice spring model (gLSM)¹⁵.

I completed my Ph.D. in Physics at School of Physical Sciences, Jawaharlal Nehru University

under the supervision of Prof. Sanjay Puri. The broad area of my doctoral research focuses on the Kinetics of Phase Separation: evolution of a system far from an unstable or metastable state to its preferred equilibrium state. We used kinetic Monte Carlo (MC) simulation methods and coarse-grained field-theoretical models (namely, Time-dependent Ginzburg-Landau (TDGL) or Cahn-Hilliard-Cook (CHC)) to study the dynamical coarsening of these far-from-equilibrium systems.

As a postdoctoral fellow, in the early years (Oct 2010- Nov 2014) I had studied the ordering dynamics with the challenge of handling multicomponent fluid mixtures, binary polymeric mixtures and block-copolymer mixtures using coarse-grained molecular dynamics (MD) simulation methods which incorporate hydrodynamic effects. Soon after, in Dec 2014 I joined as a postdoctoral fellow in Department of Chemical & Petroleum Engineering, University of Pittsburgh, USA under the supervision of Prof. Anna C. Balazs. Here I started handling the living

polymerization processes (namely, Atom Transfer Radical Polymerization (ATRP), Free Radical Polymerization (FRP), Photo-Controlled Radical Polymerization (Photo-CRP)) by combining computational modeling with experimental results, based on our collaborations with two well-known experimental groups in the area: Prof. Krzysztof Matyjaszewski (a pioneer in ATRP/FRP) from Carnegie Mellon University (CMU) and Prof. Jeremiah Johnson from Massachusetts Institute of Technology (MIT). The computational modeling of these living polymerization experiments was indeed challenging and highly demanding. I had put in my best efforts, and along with the experimental group's contribution, we resulted in several excellent publications. Later, I started working on the computational design of smart materials where we develop a composite material integrating thermo-responsive gels with photo-responsive fibers with controlled dexterity under external stimuli.

