

## RESUME

1. **Name:** Prof. (Dr.) Sangeeta Narendra Kale

2. **Designations:**

a) **Senior Professor in Physics**

**Dean & Director (International Co-operations)**

Defence Institute of Advanced Technology  
(University supported by Ministry of Defence)  
Girinagar, Pune 411025, INDIA

b) **Co-Director and Founder**

Navyukti Innovations Private Limited  
(Start-up company working on Sensor Development and Healthcare Solutions)  
DIAT-IIC, Girinagar, Pune 411025, INDIA



3. **Address:**

(a) **Official:** Department of Applied Physics, Defence Institute of Advanced Technology, Girinagar, Pune 411025, India

(b) **Residential:** C-301, Rohan Nilay -1, Aundh, Pune 411007, India

(c) **Email:** sangeetakale2004@gmail.com / sangeetakale@diat.ac.in

(d) **Mobile No./Contact No:** 09850497712

4. **Important Links:**

**Google Scholar:** <https://scholar.google.co.in/citations?user=BMoKpTQAAAAJ&hl=en>

**LinkedIn:** <https://www.linkedin.com/in/sangeeta-kale-69046720b/>

**Orcid ID:** <https://orcid.org/0000-0002-5842-0310?lang=en>

**Company Website:** <https://www.navyuktiinnovations.com/>

Other Links:

**Facebook:** <https://www.facebook.com/sangeeta.kale.3>

**Blog:** <https://sangeetakale.wordpress.com/>

**Research Lab Website:** <https://snkalelab.wixsite.com/snkalelab>

5. **Academic Qualifications:**

Degree	University/Institution	Year
B.Sc (Physics)	University of Pune	1987 – Distinction
M.Sc. (Electronic Science)	University of Pune	1989 – Rank 3 <sup>rd</sup> in University
Ph.D (Physics)	University of Pune	1996
Postdoctoral Research (Physics)	Department of Physics, University of Maryland, College Park, USA	2000-2002
Visiting Senior Scientist (Senior Associate)	International Centre for Theoretical Physics, ICTP, Trieste, Italy	2014-2020

6. **Administrative Experience**

S N	Responsibilities	Period
1.	Director (International Cooperation) and Dean (Sponsored Research)	8 <sup>th</sup> Jan. 2024 – till Date
2.	Director (Policy & Planning)	1 <sup>st</sup> Jan 2021 – 8 <sup>th</sup> Jan. 2024
3.	Controller of Examination (CoE)	1 <sup>st</sup> Jan 2023 - 8 <sup>th</sup> Jan. 2024
4.	ICC Chairperson	1 <sup>st</sup> Jan 2013 – till Date
5.	Vigilance Officer	20 <sup>th</sup> Sept. 2018 - 8 <sup>th</sup> Jan. 2024

6.	Dean (Academics), DIAT (DU)	1 <sup>st</sup> Jan 2019 – 1 <sup>st</sup> Jan 2021
7.	Dean (Student Affairs), DIAT (DU)	28 <sup>th</sup> Sept 2017 – 31 <sup>st</sup> Dec 2019
8.	Head (Materials Management Group), DIAT (DU)	23 <sup>rd</sup> August 2017 - Dec 2019
9.	Officiating Vice Chancellor, Defence Institute of Advanced Technology (DIAT) (Supported by Ministry of Defence)	11 <sup>th</sup> August, 2014 - 3 <sup>rd</sup> Feb 2015
10.	Dean (Academics), DIAT (DU)	22-03-2013 to 21-03-2015
11.	Chairperson, Doctoral Research Committee (DRS)	01-04-2015 to 23-08-2017
12.	Head, Department of Bio-Sciences & Technology	07-12-2012 to 19-09-2016
13.	Head, Department of Applied Physics	29-03-2011 to 16-09-2016
14.	Chairperson, Post Graduate Committee	March 2011 to March 2013
15.	Chairperson, Results Review Committee	March 2015 - till date

**7. Teaching and Research Experience – 34 Years:**

**(a) Subject:** Physical Sciences (Applied Physics)

**(b) Research Specialization:**

**Sensors, Diagnostics and Healthcare Solutions:** Exploring materials for sensing applications; right from material synthesis to AI-ML supported smart device design and fabrication.

**Nanomaterials and applications:** Metal and Metal oxide nanomaterials for sensing and healthcare applications. Materials include: nanoparticles and thin films of perovskite-based transition metal oxide materials, magnetic materials and wide-band gap semiconductors; in their compound/complex/nanocomposite forms, metamaterials.

**(c) Niche areas of Research:**

**1. CBW Diagnostics and field Sensors:** For weak electric and magnetic fields and sonar frequency detections bio-sensing, hazardous chemical moiety sensing for CBW diagnostics.

**2. RF Sensors :** Specific resonating sensors in RF / microwave regime as versatile sensing platforms : Structural health monitoring, manufacturing sectors, CBW, Nerve agent sensing, automobile sector and so on.

**3. Optical sensors:** This involves patterned structures for rapid sensing for healthcare product developments.

**4. Smart Materials for drug delivery :** Development of sustained drug delivery agents for wide range of healthcare applications including wound healing, ocular drug delivery, insulin release, Taxol release (chemotherapy drug release) and so on. Drug-loaded nanomaterials are synthesized and evaluated.

**8. Publications**

a) International Research Publications (peer reviewed): 141

Book / Book Chapters : 08

Patents : 02

Biographies : 02

b) National and International Research Projects completed / ongoing: 19

c) Students (Doing/completed PhD) undertaken : 15

d) Students guided towards Project Dissertation (M.Tech. and M.Sc.) ~ 75

## 9. Technologies Developed:

1. **ANANYA:** A wide area disinfectant under COVID Times.  
Tech Transfer to :  
Kinetic Green Energy & Power Solutions Ltd,  
JVD Mettle Pvt. Ltd.
2. **SILVO-KAVACH:** Nanotechnology based antibacterial solution  
Researched and produced by: Navyukti Innovations Pvt Ltd.  
Already in consumer market now
3. **S'Breeze:** Antibacterial and antifungal wide-area disinfectants  
Researched and produced by: Navyukti Innovations Pvt Ltd.  
Already in consumer market now
4. **Wound Healing smart bandages:**  
Nanomaterials-embedded drug capsules for heavy wound healing and antimicrobial  
protections for extended durations  
Delivered to DEBEL, Bangalore (DRDO) for further technology upscale
5. **HemoProbe:** A non-invasive multi-parameter monitoring optoelectronic sensor  
An AI-ML enabled electronic-digital gadget. At TRL4 level now  
To reach Production level by December-2023

## 10. About Start-Up Company:

**Entrepreneurship:** Dr. Sangeeta Kale, along with Three others have formed a Company named "**Navyukti Innovations Pvt. Ltd.**" at DIAT Innovation and Incubation facility on DIAT campus. The company works on drug delivery vehicles and sensor devices. Supported by DIAT (seed grant) and AGC-BIRAC, DBT.

## 11. Social Responsibilities:

- ✓ **Mentor Board Member at Social Innovation Labs**, PIC for mentoring start-ups to bring their social innovative products in Indian and international markets.  
(<https://si.puneinternationalcentre.org/programmes/social-enterprise-mentorship-programme/mentors/>)
- ✓ **Hon. President of India's nominee** on the **Selection Committee Boards of all National Institute of Technologies (NITs)** for faculty recruitment from August 2018 to August 2021 – An MHRD communication.
- ✓ **Court Member on Central University of Tamil Nadu** from March 2019 to March 2022  
The nomination is done by the Chancellor of CUTN.
- ✓ **President "Sharada Shakti"**, a Maharashtra unit of Vijnana Bharati (since May 2020)
- ✓ Board Member on **Armament Research Board (ARMREB) of DRDO** (since August 2017)
- ✓ **Court Member on Banaras Hindu University (BHU)** Board from 2017-2020. The nomination is done by Hon. President of India, as his nominee.
- ✓ **Trustee Member** : Lila Poonawalla Foundation, Pune, India (July 16, 2016 – July 2019)
- ✓ **Life Member of "Pune International Centre"** (since 11 February, 2016)- an auxiliary Center of "India International Centre"
- ✓ **Elected Fellow of Maharashtra Academy of Sciences** (ILF 864) since October 2008.

## 12. Awards:

- ✓ **National Award for Women Leaders** by **C4i4 Labs of Ministry of Heavy Industries, Government of India** for work in the domain of Innovation and Research in **March 2023**.
- ✓ Winner of **INSA Teachers Award for 2016, in the subject Physics**. Indian National Science Academy gives awards (one per discipline, per year) to Professors and Scientists who have contributed significantly in the domain of teaching and research.
- ✓ Winner of **MRSI medal** in 2014. This is given by Materials Research Society of India, Indian Institute of Science, Bangalore, India
- ✓ Winner of **Science Oration Award** conferred to her on 28<sup>th</sup> February 2014 by DRDO HQrs, New Delhi.

### 13. Salient Projects Implemented (Details on Page 17):

- Fabrication of Functionalised Flexible Resonators as Nerve Gas Detectors – 40.84 Lakhs – **DAE-BRNS** - 2024-26 (ongoing)
- Progression from a well validated prototype of a non-invasive, blood-free RBC indices and morphology detector towards a product in the market – 27.5 Lakhs – **BITS-BioCyTiH** – 2024-25 (ongoing)
- Development of tactile sensors for object identification and gripping using a combination of sensing materials and sensor arrays, **DRDO CARS** Project – R&D Engineers, 10-03-2023 to 09-03-2025 – 95.75 Lakhs (Ongoing)
- Design and fabrication of wide-band rejection shields using multilayers of periodic resonator arrays and carbon-based nanocomposites – 35 Lakhs - **DST** (completed)
- Development of SO<sub>x</sub>/NO<sub>x</sub> derivatives gas sensors using nanomaterials-functionalised ring resonators - 30 Lakhs – **DAE-BRNS** (completed)
- DIAT-DRDO Programme on Nanomaterials: Nanomaterials for Defence Applications: Coatings, Devices and Healthcare. – 45 Crores - **DRDO** (completed)
- Cross-linked polymeric cages for encapsulation and sustained release of nanomaterials /drugs – 50 Lakhs - **DST** (completed)
- Metal oxide-Polymer nanocomposites for detection of gas pollutants in Sugar industries : 20 Lakhs - **DST** (completed)
- To synthesize self- assembled oriented nanomagnetic particles in thin film form and study its property regime : 15 Lakhs - **UGC-DAE-CSR** (completed)
- Synthesis and testing of manganite- semiconductor based microdevices : 25 Lakhs - **DST** (completed)
- Synthesis and property study of semiconducting oxides with magnetic nanocluster inclusions, for their possible applications in various sensing devices. : 15 Lakhs - **ISRO** (completed)
- Synthesis and Characterization of Bulk Ferromagnetic Semiconductor Oxide Materials : 5 Lakhs - **UGC** (completed)
- Synthesis of bulk and thin films of diluted magnetic semiconductors and investigation of their electrical, optical and magnetic properties for various sensing applications : **ISRO** (completed)

## 14. Publications

### a) Book Chapters

Sr.No.	Name of Book Chapters	Author (s)	Year	Publisher
1.	Magnetic nanoparticles for biomedical applications	<b>Sangeeta N Kale</b> , Anup Kale, Sonia Kale, S.B. Ogale	2011	Applications of Nanomaterials Edited by Ramesh S. Chaugule and Shrikant C. Watawe Pages: 1–18 American Scientific Publishers Book Chapter Number 9, page 1-18, “Applications of Nanomaterials” 2012. ISBN: 1-58883-181-7
2.	Zinc oxide nanomaterials as amylase inhibitors and for water pollution control	Rohini Kitture, Sandip Dhobale and <b>S.N. Kale*</b>	2014	M. S. R. Rao and T. Okada (eds.), ZnO Nanocrystals and Allied Materials, Springer Series in Materials Science 180, DOI: 10.1007/978-81-322-1160-0_13, Springer India 2014 Chapter No. 13, Page 269-287, 2014
3.	Nanomaterials as enhanced antimicrobial agent/activity-enhancer for transdermal applications: A review	<b>S.N. Kale*</b> , Rohini Kitture, Sougata Ghosh, Balu A. Chopade, J.V. Yakhmi	2017	Chapter 11, Antimicrobial Nanoarchitectonics  <a href="http://dx.doi.org/10.1016/B978-0-323-52733-0.00011-2">http://dx.doi.org/10.1016/B978-0-323-52733-0.00011-2</a> ,  2017, Page 279 – 322, Elsevier Publications
4.	A review on nanomaterial-modified optical fiber sensors for gases, vapors and ions	Dnyandeo Pawar & Sangeeta N. Kale.	2019	Microchimica Acta <a href="https://doi.org/10.1007/s00604-019-3351-7">https://doi.org/10.1007/s00604-019-3351-7</a> Springer-Verlag GmbH Austria, part of Springer Nature 2019 <b>volume 186</b> , Article number: 253 (2019)
5.	Handbook of Advanced Ceramics and Composites –: Manifestations Of Nanomaterials In Development Of Advanced Sensors For Defence Applications	Rohini Kitture and Sangeeta N Kale	2020	Springer Nature Switzerland AG 2020 Y. R. Mahajan, R. Johnson (eds.), Handbook of Advanced Ceramics and Composites, Page – 1-32 <a href="https://doi.org/10.1007/978-3-030-16347-1_2">https://doi.org/10.1007/978-3-030-16347-1_2</a>

### b) Co-authored Text Books

Sr.No.	Name of Books	Author (s)	Year	Publisher
1.	Microprocessors and Communication Principles	Dr. S.N. Kale: Co-Author	2003	Disha Publishers, Pune, India
2.	Digital Electronics	Dr. S.N. Kale: Co-Author	2003	Disha Publishers, Pune, India
3.	Linear Electronics	Dr. S.N. Kale: Co-Author	2003	Disha Publishers, Pune, India
4.	Instrumentation Electronics and Process Control Instrumentation	Dr. S.N. Kale: Co-Author	2003	Disha Publishers

c) **Biography Chapter**

Sr.No.	Name Monographs	Author (s)	Year	Publisher
1.	Lilawati's Daughters	Dr. S.N. Kale: Co-Author	2008	Released on 31 <sup>st</sup> October 2008 by Indian Academy of Sciences, Bangalore, India. The book is a short biography of Indian Women Scientists.  <a href="https://docplayer.net/118405473-Lilavati-s-daughters.html">https://docplayer.net/118405473-Lilavati-s-daughters.html</a>
2.	Women Shaping Scientific Frontiers – “From Lab-coats to Leadership”	Dr. S.N. Kale: Co-Author	2024	INSA (Indian National Science Academy) publication, 2024 publication along with CERN-Switzerland

d) **Conferences organized (only the salient ones):**

- ❖ Symposium on Nanomaterials and their Applications (SNMA2009) at the Fergusson College, between March 4-6, 2009.
- ❖ Conference on Nanotechnology for Biological and BioMedical Applications (Nano-Bio-Med) October 10-14, 2011, Trieste - Italy
- ❖ 1<sup>st</sup> International Conference on Functional Materials for Defence (ICFMD 2012), 18-20 May, Conducted by DIAT-NPS-ONRG
- ❖ Second Conference on Nanotechnology for Biological and BioMedical Applications (Nano-Bio-Med) October 14-18, 2013, Trieste – Italy organized by Dr. Sangeeta Kale (India), Dr. Joe Niemela (Italy) and Dr. SM Iqbal (USA) at ICTP, Italy
- ❖ Conference on “Nanotechnology and Advanced Functional Materials (NTAFM-2013)” on July 24-25, 2013 at CSIR-NCL, with Dr. SN Kale as Main Convener, on behalf of DIAT and MRSI-Pune Chapter. The Materials Research Society of India (Pune Chapter), CSIR-NCL, IISER-Pune and DIAT (Pune) are co-organizing this event.
- ❖ Arranged Conference on “BioSciences and Health Engineering (BHE2014) at DIAT along with Bharatiyar University (Coimbatore and INMAS (New Delhi)” between 17-18 January, 2014 at DIAT, with Dr. SN Kale as Co- Organisor.
- ❖ One day workshop-cum-meeting on Road map for DIAT for indigenous development of ELFE sensing probe/element. This was conducted by Department of Applied Physics, DIAT, on 20<sup>th</sup> May, 2014
- ❖ Conference on Nanotechnology for Biological and BioMedical Applications (Nano-Bio-Med) 2015, December 01-04, 2015 at IIT-Bombay.
- ❖ Advanced Laser and Optical Photonics (ALOP 2019) – A course of Physics Teachers in the domain of Optics. Funded by UNESCO and ICTP. Worked as Course Director. A part of Faculty Development Programme, along with Dr. Joe Niemela, ICTP. – December 8-13, 2019.
- ❖ Arranged and organized the International Conference on Laser Deposition (iCOLD-2023) in association with IIT Madras and AIET, Moodbidri during March 23 – 25, 2023 at DIAT, Pune.

e) **Patents: 02**

1. CBR Number : 11926 dated 01/07.2016 (provisional filing)
2. IPO 02221047244, 202221047244, published – 06/10/2023  
A NON-INVASIVE DEVICE AND A METHOD TO DETECT HEAMOGLOBIN CONCENTRATION IN BLOOD, Patent status Patent published: IPO 202221047244, dated 06-10-2023

#### f. List of Publications:

141. Resonator Based Sensing Towards Disease Diagnostics using Volatile Organic Compounds as Biomarkers,  
Rajat Srivastava, Dhanashri Sabale, Shravani Kale, Sangeeta Kale, Sensors and Actuators A: Physical, 116119, 2024 (in press)
140. A synergistic combination of 2D MXene and MoO<sub>3</sub> nanoparticles for improved gas sensing at room temperature  
S Kale, D Sabale, R Srivastava, VP Londhe, SN Kale  
Journal of Physics D: Applied Physics 57 (32), 325101, 2024
139. Non-destructive methodology for crack detection using machine learning-assisted resonant sensor  
R Srivastava, A Vaishnav, SN Kale  
Measurement 229, 114429, 2024
138. Towards thalassemia detection using optoelectronic measurements assisted with machine-learning algorithms: a non-invasive, pain-free and blood-free approach towards diagnostics  
B Nair, C Mysorekar, R Srivastava, S Kale  
IEEE Applied Sensing Conference (APSCON), 1-4, 2024
137. Development of Radio-Frequency Sensors for Detection of Volatile Organic Compounds in Liquid Media  
R Srivastava, O Gaikwad, SN Kale  
2024 IEEE Applied Sensing Conference (APSCON), 1-4, 2024
136. Resonance-based Sensor for Detection of Nitrogen Oxide (NO<sub>x</sub>)-polluted Water in Industrial Effluents  
S Kale, V Kale, S Kale  
2024 IEEE Applied Sensing Conference (APSCON), 1-4, 2024
135. Metamaterial inspired resonators as microwave sensors: A review  
R Srivastava, S Kale  
Engineering Science & Technology, 28-47, 2024
134. Tuneable work function of titanium carbide (Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>) by modification in surface termination groups  
S Kale, S Parmar, S Datar, SN Kale  
Materials Chemistry and Physics 306, 128052, 2023
133. Real-time transformer oil monitoring using planar frequency-based sensor  
R Srivastava, Y Kumar, S Banerjee, SN Kale  
Sensors and Actuators A: Physical 347, 113892, **2023**
132. Development of PDMS+F-MWCNT based flexible pressure sensors for tactile sensing  
Dhanashri Sable, Aman Gupta, Rajat Srivastava, Animesh gopal, Kadhiraan Shanmuganathan, S.N. Kale  
IEEE Proceedings (INCOFT, 2023 2<sup>nd</sup> International Conference on Futuristic Technologies), **2023**
131. Design and implementation of portable network analyser for in-line sensor measurements  
Chinmai Mysorekar, Rajat Srivastava, Hiteshu Sharma, S.N. Kale  
IEEE Proceedings (INCOFT, 2023 2<sup>nd</sup> International Conference on Futuristic Technologies), **2023**
130. Direct current magnetron sputtered Ni<sub>3</sub>Al thin films with electron transport behaviour for superior electromagnetic shielding  
Santhosh Kumar Adpa, S Shanmukharao Samatham, Radhamanohar Aepuru, Kalyani Date, Ravi Prakash Magisetty, Suwarna Datar, SN Kale, Rodrigo Espinoza González, Vijaya Bhaskara Rao Bhaviripudi, Applied Physics A 129, 313, **2023**
129. Tuneable work function of titanium carbide (Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub>) by modification in surface termination groups  
S Kale, S Parmar, S Datar, SN Kale, Materials Chem. and Phys., 128052, **2023**
128. Metamaterial Inspired Resonators as Microwave Sensors: A Review  
R Srivastava, S Kale, Engineering Science & Technology, 28-47, **2023**
127. Functionalised Biosensor for Diagnostics of Dengue NS1 Antigen: An Integrated Approach Towards Device Development  
V Kale, S Rath, C Chavan, T Bhawe, SN Kale  
IEEE 7th International conference for Convergence in Technology (I2CT), 1-5, **2022**

- 126 Resonance Based Sensor for Explosive (HMX) Detection and Classification Using k-NN Algorithm  
R Srivastava, S Parmar, S Srivastava, V Kale, SS Datar, SN Kale  
IEEE 7th International conference for Convergence in Technology (I2CT), 1-6, **2022**
- 125 Detection of bacterial contaminants via frequency manipulation of amino-groups functionalized Fe<sub>3</sub>O<sub>4</sub> nanoparticles based resonant sensor  
V Kale, C Chavan, S Bhapkar, KG Girija, SN Kale  
Biomedical Physics & Engineering Express 8 (6), 065002, **2022**
- 124 Superior electromagnetic wave absorption performance of Fe<sub>3</sub>O<sub>4</sub> modified graphene assembled porous carbon (mGAPC) based hybrid foam  
BVB Rao, M Jena, R Aepuru, R Udayabhaskar, MR Viswanathan, ...  
Materials Chemistry and Physics 290, 126512, **2022**
- 123 Real-time transformer oil monitoring using planar frequency-based sensor, R Srivastava, Y Kumar, S Banerjee, SN Kale  
Sensors and Actuators A: Physical 347, 113892, **2022**
- 122 Studies on drug-assisted silver nanoparticles to reduce granulocytopenia and improve drug delivery for cancer therapy C Chavan, S Prabhune, S Shedge, R Patwardhan, S Kamble, AVR Murthy, ... Applied Physics A 127 (5), 1-12, **2021**
121. Chemical etching of glasses in hydrofluoric Acid: A brief review  
A Jayarama, GK Kannarpady, S Kale, S Prabhu, R Pinto  
Materials Today: Proceedings (<https://doi.org/10.1016/j.matpr.2021.12.110>), **2021**
120. Resonance-based detection of perilous sulphur dioxide using TiO<sub>2</sub> nanoparticles and unit-cell ring resonator  
V Kale, C Chavan, C Bhongale, KG Girija, SN Kale  
Sensors and Actuators A: Physical, vol 331, **2021**, 112898
119. Studies on drug-assisted silver nanoparticles to reduce granulocytopenia and improve drug delivery for cancer therapy  
C Chavan, S Prabhune, S Shedge, R Patwardhan, S Kamble, AVR Murthy, ...  
Applied Physics A 127 (5), 1-12, **2021**
118. Sorption of brilliant green dye using soybean straw-derived biochar: characterization, kinetics, thermodynamics and toxicity studies  
G Vyavahare, R Gurav, R Patil, S Sutar, P Jadhav, D Patil, YH Yang, S.N. Kale et.al.  
Environmental Geochemistry and Health, **43**, pages 2913–2926 (**2021**) I.F. 4.609
- 117 Comparative evaluation of MAX, MXene, NanoMAX, and NanoMAX-derived-MXene for microwave absorption and Li ion battery anode applications  
Arundhati Sengupta, B. V. Bhaskara Rao, Neha Sharma, Swati Parmar, Vinila Chavan, Sachin Kumar Singh, Sangeeta Kale, Satishchandra Ogale  
Nanoscale, 12, 8466, **2020**
- 116 Fe<sub>3</sub>O<sub>4</sub>-mediated dielectric sensor using metamaterial-inspired resonators for the NO<sub>2</sub> sensing  
Vivek Kale, Chetan Chavan, Dhanashree Sable, K.G. Girija, Shaibal Banerjee, S.N. Kale  
Applied Physics A, 126, 09, **2020**  
DOI: 10.1007/s00339-020-03905-8
- 115 Electric field controlled near-infrared high-speed electro-optic switching modulator integrated with 2D MgO  
Ch. N. Rao, Dnyandeo Pawar, Umesh T. Nakate, Radhamanohar Aepuru, XingGao Gui, Ramalinga V. Mangalaraja, S. N. Kale, Eun-kyung Suh, Wenjun Liu, Deliang Zhu, Youming Lu, and Peijiang Cao  
Optics Letters Vol. 45, pp. 4611-4614 (2020) <https://doi.org/10.1364/OL.393796>
- 114 High-performance dual cavity-interferometric volatile gas sensor utilizing Graphene/PMMA nanocomposites,  
DnyandeoPawar, Rajesh Kanawade, Ajay Kumar, Ch N Rao, Peijiang Cao, Shankar Gaware, Dattatray Late, Sangeeta N Kale, ST Navale, WJ Liu, DL Zhu, YM Lu, Ravindra K Sinha,  
Sensors & Actuators: B. Chemical **312**, 127921 2020



- 113 Ampicillin-mediated functionalized gold nanoparticles against ampicillin-resistant bacteria: strategy, preparation and interaction studies, Chetan Chavan, Sagar Kamble, AVR Murthy, S.N. Kale, *Nanotechnology* 31 215604, 2020 (2020).
- 112 Microneedles of chitosan-porous carbon nanocomposites: Stimuli (pH and electric field)-initiated drug delivery and toxicological studies. DOI: 10.1002/jbm.a.36672, 13 Shankar A. Gaware, Kasturi A. Rokade, Preetam Bala, Sangeeta N. Kale *Journal of Biomedical Materials Research – Part A*, 107, 1582-1596, 2019
- 111 Manifestations of Nanomaterials in Development of Advanced Sensors for Defense Applications, Rohini Kitture and Sangeeta Kale, Springer Nature Switzerland AG 2019 Y. Mahajan, R. Johnson (eds.), *Handbook of Advanced Ceramics and Composites*, [https://doi.org/10.1007/978-3-319-73255-8\\_2-1](https://doi.org/10.1007/978-3-319-73255-8_2-1)
110. Enhanced sensitivity of magneto-optical sensor using defect induced perovskite metal oxide nanomaterial Ch N.Rao, Piyush Dua, Piyush Kuchhal, Youming Lu, S.N.Kale, PeijiangCao, *Journal of Alloys and Compounds*, 797, 2019, 896-901
- 109 A review on nanomaterial-modified optical fiber sensors for gases, vapors and ions Dnyandeo Pawar & Sangeeta N. Kale, *Microchimica Acta* (2019) 186:253 <https://doi.org/10.1007/s00604-019-3351-7>,
- 108 Self-Assembled Pullulan Acetate Nanoparticles for pH-Dependent Controlled Drug Delivery Application, Preetam Bala and Sangeeta N. Kale, *Advanced Science, Engineering and Medicine* Vol. 11, 1–8, 2019 [www.aspbs.com/aseem](http://www.aspbs.com/aseem) (in press)
107. Silica-chitosan nanocomposite mediated pH-sensitive drug delivery-Shankar A. Gaware, Kasturi A. Rokade, S.N. Kale, *Journal of Drug Delivery Science and Technology*, 49, 345, 2019
106. Fe<sub>3</sub>O<sub>4</sub>-decorated graphene assembled porous carbon nanocomposite for ammonia sensing: Study using optical fiber Fabry-Perot Interferometer Dnyandeo Pawar, BV Bhaskara Rao, S.N. Kale *Analyst*, 2018, 143, 1890 – 1898
105. Systematic magnetic fluid hyperthermia studies of carboxyl functionalized hydrophilic superparamagnetic iron oxide nanoparticles based ferrofluids, G. Kandasamy, Atul Sudame, Piyush Bhati, Anandita Chakrabarty, S.N. Kale, Dipak Maity, *Journal of Colloid and Interface Science*, 514, 534-543, 2018
104. Nanomaterial-Functionalized-Metamaterial-Inspired Resonators for Ultra-Sensitive and Selective H<sub>2</sub>S Sensing, Vaishali Rawat, Shreeram Joglekar, S. N. Kale, *IEEE Sensors proceedings* 1045, 2018
103. Low Magnetic Field Sensing Using Manganite (La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub>) nanoparticles with Optical Fiber Interferometric Approach, Asutosh Kinikar, Dnyandeo Pawar, S N Kale, *IEEE Xplore*, 1048, 1048, 2018
102. Observation of magnetism in La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub>—graphene nanoribbons complex: a probable magnetoelectronic material study, Anupama Joshi, Suwarna Datar and S N Kale, *Mater. Res. Express* 4 (2017) 075050
101. Nanomaterials as Enhanced Antimicrobial Agent/Activity Enhancer for Transdermal Applications: A Review Sangeeta N. Kale, Rohini Kitture, Sougata Ghosh, Balu A. Chopade, Jatinder V. Yakhmi, Chapter 11, Page 279, *Antimicrobial Nanoarchitectonics* <http://dx.doi.org/10.1016/B978-0-323-52733-0.00011-2>. Book Chapter in the Book entitled *Antimicrobial Nanoarchitectonics – from Synthesis to applications*. Edited by Alexandru Mihai Grumezescu – Elsevier Publications.
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**g. Research Projects Handled:**

<b>Sr. No.</b>	<b>Project Title</b>	<b>Funding Agency</b>	<b>My Designation</b>	<b>Duration</b>
1	Synthesis of bulk and thin films of diluted magnetic semiconductors and investigation of their electrical, optical and magnetic properties for various sensing applications	University of Pune-Indian Space Research Organization (UoP-ISRO) ~ 4 Lakhs	Principal Investigator  Co-PI: Dr. R.S. Joshee	1 Year (March 2004-April 2005) Completed
2.	Synthesis and Characterization of Bulk Ferromagnetic Semiconductor Oxide Materials	University Grants Commission (UGC) ~ 50,000.00	Principal Investigator  Co-PI: Dr. R.S. Joshee	3 Years (2004-2007) Completed
3.	Synthesis and property study of semiconducting oxides with magnetic nanocluster inclusions, for their possible applications in various sensing devices.	University of Pune-Indian Space Research Organization <i>UoP-ISRO</i> ~ 5 Lakhs	Principal Investigator  Co-PI: Dr. R.S. Joshee	2 Years (2005-07) Completed
4.	Synthesis and testing of manganite-semiconductor based microdevices	Department of Science and Technology (DST) ~ 25 Lakhs	Principal Investigator	3 Years (2007-10) To be completed in Jan 2011
5.	Synthesis and study of surfactant coated manganite nanoparticles for various biomedical applications	University of Pune Grant ~ 3 Lakhs	Co-Investigator  PI: Dr. R.S. Joshee	2 Years (2007-09) Completed
6.	To synthesize self-assembled oriented nanomagnetic particles in thin film form and study its property regime	UGC-DAE Consortium for Scientific Research- CRS proposal ~ 7 Lakhs	Principal Investigator  CoPI: Dr. R.J. Choudhary	4 Years (for 2007-11) Completed
7.	Metal oxide-Polymer nanocomposites for detection of gas pollutants in Sugar industries	Department of Science and Technology (DST) ~ 19 Lakhs	Principal Investigator  CoPI: Dr. N.M. Kulkarni	1.5 Years (2009-11) Completed
8.	Cross-linked polymeric cages for encapsulation and sustained release of nanomaterials /drugs	Department of Science and Technology (DST) – NanoMission ~ 35 Lakhs	Principal Investigator	Completed (2010-13)

9.	Synthesis and study of monodispersed and anisotropy-tuned manganite nanoparticles : application to sensors and devices	Indian Nanoelectronics Programme – IIT-Bombay (INUP – IITB)  ~ 2 Lakhs	Principal Investigator	Completed (August 2011 – July 2013)
10.	DIAT-DRDO Programme on Nanomaterials:  Nanomaterials for Defence Applications: Coatings, Devices and Healthcare.	ER-IPER, DRDO Nano-Science and Technology Initiatives, DRDO, New Delhi  ~43 Crores	Principal Investigator along with 8 faculty colleagues from DIAT	Completed in March 2018
11.	Fabrication of Metamaterial gold/silver structures from GHz to PHz domain for biosensing applications	INUP Users project from IIT-Bombay 10 Lakhs	Principal Investigator	Completed
13.	Sustained Drug releasing hydrogel nanoparticles for bacterial eye infection	DIAT in-house project  15 Lakhs	Principal Investigator	Completed in March 2018
14.	Multi-functional magnetic nanoparticles for cancer theranostic applications	Department of Science and Technology (DST) – NanoMission  ~ 50 Lakhs	Co-PI Along with Dr. Dipak Maity Department of Mechanical Engineering Shiv Nadar University – PI	Completed in 2019
15.	Development of SOx/NOx derivatives gas sensors using nanomaterials-functionalised ring resonators	Board of Research in Nuclear Science (BRNS)  28 Lakhs	Principal Investigator, along with Dr. Shaibal Banerjee and Dr. K. Girija (BARC)	Ongoing (March 2018 to 2021)-completed
16	Design and fabrication of wide-band rejection shields using multilayers of periodic resonator arrays and carbon-based nanocomposites	Department of Science and Technology (DST) – NanoMission – Nanotechnology Board  32 Lakhs	Principal Investigator, along with Dr. Bazil Raj as Co-PI	Ongoing (November 2019 to March 2022) - completed
17	Spray to combat COVID-19 and disinfecting surface using drug-mediated nanoparticles for medical personnel	DIAT Covid project grant - 1 Lakh	Principal Investigator	Completed (May 2020 to November 2020)

	protection and hospital sanitation			
18	Development of biodegradable diclofenac-microneedle-patch for painless transdermal drug delivery for analgesic applications	DIAT-IIC project grant - 4.9 Lakhs	Principal Investigator along with Dr. Jitendra Ingole, Dr Rohini Kitture and Dr. Suwarna Datar as Co-PIs	Completed (November 2020 to December 2022)
19.	Design and fabrication of wide-band rejection shields using multilayers of periodic resonator arrays and carbon-based nanocomposites	Department of Science and Technology (DST) – NanoMission 32 Lakhs	Principal Investigator, along with Dr. Bazil Raj as Co-PI	Completed (November 2019 to October 2022)
20	Development of tactile sensors for object identification and gripping using a combination of sensing materials and sensor arrays	DRDO CARS Project – R&D Engineers 95.75 Lakhs	Principal Investigator along with Prajakta K. as Co-PI	10-03-2023 to 09-03-2025 (Ongoing)
21	Fabrication of Functionalized Flexible Resonators as Nerve Gas Detectors	Board of Research in Nuclear Science (BRNS) 32.24 Lakhs	Principal Investigator along with Dr S. Banerjee as Co-PI and Dr Girija (BARC) as CI	February 2024 – 2026 (Ongoing)
22.	Progression from a well validated prototype of a non-invasive, blood-free RBC indices and morphology detector towards a product in the market	BITS-BIOCyTiH Technology Hub Grant 27.5 Lakhs	Principal Investigator along with NIPL as technology development partner	March 2024 – 2026 (Ongoing)

### Other Projects

OTHER PROJECTS –INTERNATIONAL –for students exchange				
Synthesis and Surface Modification of Iron oxide Nanoparticles (NPs)	<p>KHYS-GASTSTIPENDIUM   ANTRAG Antrag auf Gewährung eines KHYS-Gaststipendiums</p> <p>Application for a KHYS Visiting Researcher Scholarship</p>	<p>Principal Investigator along with</p> <p>Dr. Ljiljana Fruk Karlsruhe Institute of Technology (KIT) DFG-Centre for Functional Nanostructures Wolfgang Gaede Karlsruhe, Germany</p>	<p>KHYS, Germany for Rohini Kitture</p> <p>(March 2012-July 2012)</p>	

Investigation of the surface properties in nanostructured thin films of doped wide-band-gap semiconductors	<p>DIRECTION DE LA RECHERCHE Service de la Recherche et des Études Doctorales</p> <p>1, rue Thomas Becket 76821 – MONT SAINT AIGAN Cedex for Eiffel Fellowship, France</p>	<p>Principal Investigator along with:</p> <p>Prof. Béatrice HANNOYER,</p> <p>Pr. Université &amp; INSA de Rouen GPM UMR 6634 CNRS Institut des Matériaux de Rouen Avenue de l'Université - BP 12 Cedex-FRANCE</p>	<p>Proposal for Eiffel Fellowship for my student, Sandip Dhobale</p> <p>(from September 03, 2011 to July 2012)</p>
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#### h) List of Salient Conferences attended:

Name and Place	Year
67. Invited Talk at International Union of Materials Research Society's International Conference in Asia 2024 (IUMRS-ICA 2024) entitled "MXene ( $\text{Ti}_3\text{C}_2\text{T}_x$ ) Systems for Device Applications" at Indore, India	December 3-6, 2024
66. Invited Talk at 50 <sup>th</sup> International Conference on Metallurgical Coatings and Thin Films (ICMCTF – 2024) entitled "Microstructure Tuning of MXene ( $\text{Ti}_3\text{C}_2\text{T}_x$ ) Systems for Device Applications" at San Diego, CA, USA	19-24 May 2024
65. Invited Talk at Manipal, MAHE conference organized by Springer Nature, UK on "Novel Materials for Healthcare"	26-27 Feb. 2024
64. Invited Talk at 22nd edition of the International Workshop on the Physics of Semiconductor Devices (IWPSD 2023). Entitled "Tunable work-function and morphological studies on MXene ( $\text{Ti}_3\text{C}_2\text{T}_x$ )-based nanocomposites for various device applications" organized by the Indian Institute of Technology Madras	13 – 17 December, 2023
63. Invited Tutorial talk at IEEE-Sensors 2023, entitled "Metamaterial-inspired Miniaturized Radio-frequency Resonators for Versatile Industrial Sensing Applications" at Vienna Austria	29 Oct – Nov 01, 2023
62. Plenary Talk at 2 <sup>nd</sup> BRICS (Brazil-Russia-India-China-SouthAfrica) workshop on Biophotonics entitled "Design and Development on non-invasive optoelectronic biosensors for primary healthcare diagnostics" Online mode conducted by Manipal University	16-18 May 2023
61. Invited talk at IEEE-Sensors 2018, entitled "Nanomaterial-Functionalized-Metamaterial-Inspired Resonators for Ultra-Sensitive and Selective $\text{H}_2\text{S}$ Sensing" at Pullman, Aerocity, New Delhi	December 2018
60. Talk at 62 <sup>nd</sup> DAE Solid State Physics Symposium, "Nanomaterials - functionalised Optical Fiber based sensors for Chemical-Biological hazard diagnostics" at BARC, Mumbai	December 26-30, 2017
59. Talk at EMN Conference on Multifunctional Hybrids and Nanomaterials, entitled "Exploring electromagnetic responses of nanocomposites as absorbers" at Radisson Celebration, Orlando, USA	4-8 December, 2017
58. Invited Talk at National Symposium on Radiation and Photochemistry (NSRP-2017), entitled "Radio-frequency Electrical Metamaterial Sensors for Hazardous Environment Detections" Manipal University, Mangalore, India	March 2-4, 2017
57. Invited Talk at "IEEE Sensors" Conference, entitled "Optical Fiber manipulations using nanomaterials : A way towards miniaturised smart sensors" at Orlando, Miami, USA	30 <sup>th</sup> October 2016

56. Invited Talk entitled “Novel composites as radio-frequency absorbers in Radar technology” at Shiv Nadar University, New Delhi.	15 <sup>th</sup> September, 2016
55. Invited Talk at 2nd Mumbai-Pune Semiconductor Meeting entitled “Exploring wide band gap semiconductors along with Optical Fibers for sensing applications” at IISER Pune	12 <sup>th</sup> March, 2016
54. Invited Talk at Indian Science Congress 2016 entitled “Nanotechnology based smart sensors for surveillance, stealth and environmental hazard detections” University of Mysore, India	3-7 January, 2016
53. Invited Talk entitled “Carbon- nanocomposites as radio-frequency absorbers for applications in stealth and electromagnetic shielding” at 4th International Conference on Advanced Nanomaterials and Nanotechnology (ICANN2015), in Guwahati-Assam, India	08-11 December 2015
52. Director’s Talk at Third Conference on Nanotechnology for Biological and BioMedical Applications (Nano-Bio-Med 2015), entitled “Nanomaterials for theranostics and drug delivery” at IIT-Mumbai, India	December 01-04, 2015
51. Invited talk at International Baltic Conference on Magnetism (IBCM 2015) entitled “Nanocomposites for radio frequency applications” at Kaliningrad, Russia	30 <sup>th</sup> Aug – 3 <sup>rd</sup> September 2015
50. Invited talk at “Symposium on Recent Advances in Photonics”- entitled “Optical Fiber manipulations using nanomaterials for sensing applications” at Manipal University, India	08 <sup>th</sup> August 2015
49. Invited Talk at IOM, Elettra Campus on “Detection of low fields using optical Fiber based sensors” at Elettra, ICTP, Italy	04 <sup>th</sup> May, 2015
48. Invited Talk at International Conference on Metallurgical Coatings and Thin Films (ICMCTF-2015) on ‘Nanomaterials for applications in Health care’ at San Diego, USA	20-24 April, 2015
47. Invited Talk entitled “Low field detections using nanomaterials-manipulated Optical Fiber based sensors” at Nano India 2015, at Sastra Univeristy, Thanjavur	29-30 January, 2015
46. Invited Talk entitled “Functional Nanomaterials for cancer hyperthermia and drug Delivery” at International Symposium on Nanotechnology and Cancer (ISNACT 2015, IIT-Bombay	19-21 January, 2015
45. Invited talk at UGC-DAE-CSR, Indore on “Advanced functional materials for applications in Defence”	20 <sup>th</sup> June 2014
44. Invited Talk at International Conference on Optics and Optoelectronics’ (ICOL-2014) at Instruments Research & development Establishment, Dehradun, Uttarakhand, India on the topic entitled “Use of magneto-optic nanomaterials for optical-fiber based sensing”	05-08 March 2014
43. MRSI Medal talk at IISc, Bangalore on “Tuning the property-space and assembly of hybrid conjugates for healthcare applications; especially for cancer hyperthermia and controlled-drug-release”	12-14 Feb. 2014
42. Invited talk at 3rd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2013) entitled “Electrical-Interference-independent low field magnetic sensing using Optical Fiber based nanosensors” between 1-3 December 2013	1 <sup>st</sup> to 3 <sup>rd</sup> December, 2013
41. Invited talk at University of Southern California (USC), CA entitled “Electrical-Interference-independent low field magnetic sensing using Optical Fiber based nanosensors” on 25 <sup>th</sup> October, 2013, at USC, CA, USA	25 <sup>th</sup> October, 2013
40. Directors talk at NanoBiomed2013 between entitled “Hybrid (complexes of natural organic extracts and inorganic materials) conjugate assemblies for drug release and therapeutics” between 14-18 October, 2013, at ICTP, Trieste, Italy	14-18 October, 2013
39. Invited Talk at International Conference on Materials for Advanced Technologies”(ICMAT 2013) on the paper entitled “Nanomaterials for sensing and EMI applications” between 30 <sup>th</sup> June to 5 <sup>th</sup> July, 2013, Singapore	30 <sup>th</sup> June to 5 <sup>th</sup> July, 2013
38. Invited Talk at MILIT on “Nanotechnology in Defence: typically for Military Avionics” in their special workshop on Military Avionics conducted for AirForce Officers between 11-15 <sup>th</sup> March, 2013	14 <sup>th</sup> March, 2013

37. Presentation at National Institute for Interdisciplinary Science and Technology (NIIST, CSIR) for DST-NanoMission Project Review	22 <sup>nd</sup> February, 2013
36. Presentation at Vellore Institute of technology (VIT) for DST-TSD final review	14 <sup>th</sup> February, 2013
35. Presentations and Signing of MoUs with Technion Institute (Haifa), Tel Aviv University (Tel Aviv) and Elbit Systems, Advance Technology Centre(Haifa), during a delegation visit to Israel.	18 <sup>th</sup> – 20 <sup>th</sup> Nov. 2012.
34. Presentation on “DIAT initiatives on development of Sensors” at DRDO Hqrs, in a “Workshop on Nanotechnology” at New Delhi	October 01, 2012
33. Invited Talk at “National Symposium on Nanobiotechnologies” entitled “Bio-Functional Inorganic Nanomaterials and Nanocomposites for Therapeutics and Diagnostics” organized by IIT-Mandi.	June 1-2, 2012
32. Arranged “International Conference of Functional Materials for Defence (ICFMD-2012)” as a Co-Convener, along with Naval PostGraduate School (NPS), USA and Office of Naval Research (ONR-G), USA	May 18-20, 2012
31. Invited Talk at “Indo-Japan Symposium on Zinc Oxide” entitled “Zinc oxide nanomaterials: for glucose sensing, amylase inhibition and sensing devices” organized by IIT-Madras.	January 09-10, 2012
30. Invited Talk at 2nd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN -2011)” entitled “Functional nanomaterials in sensors and biomedicine”, IIT-Guwahati	December 08-10, 2011
29. Invited Talk at DAE-BRNS 6 <sup>th</sup> National Symposium on Pulsed Laser Deposition of Thin Films and Nanostructured Materials. at IISc, Bangalore on title entitled “Low and high power laser-assisted synthesis, assembly and annealing of nanomaterials and study of their property regimes”	November 09-11, 2011
28. Invited Talk at International Conference on NanoBioMed-2011 at Trieste, Italy	October 10-14, 2011
27. Invited Talk at National conference held at National Defence Academy, Pune, entitled “Synthesis and Applications of Functional Materials” (SAFM 2011)	September 23, 2011
26. Invited Talk at International Conference to celebrate the Golden Jubilee of EMSI (EM50)entitled “IMAGING STUDIES ON METAL OXIDE NANOMATERIALS FOR SENSORS AND BIOMEDICINE”, HYDERABAD	July 6-8, 2011
25. Presentation on “Structural, Transport, Magnetic and Morphological Property Variations of Complex Manganite (La <sub>0.7</sub> Ba <sub>0.3</sub> MnO <sub>3</sub> ) Nanosystems Using Citrate Chelating Process” at ICMAT 2011 conference at Singapore	28 June – 2 July, 2011
24. Presentation on “Sustained Release Studies of Curcumin from Mesoporous Silica: Promising Antimicrobial Medicinal Patches” at ICMAT 2011 conference at Singapore	28 June – 2 July, 2011
23. Invited Talk at Second World Conference on Nanomedicine and Drug Delivery (WCN 2011) entitled “Nanotechnology for Biomedicine and Healthcare” in Kottayam, Kerala, India	March 11-13, 2011
22. Invited Talk at Silver Jubilee celebrations of Fergusson College (CS Department)on “Smart Materials for Defence Applications”.	March 07, 2011
21. Invited talk at CFEES (Centre for Fire Explosive and Environmental safety)-DRDO, New Delhi on “Metal and Metal oxide nanomaterials for defence applications”	February 18, 2011
20. Talk/Preentation to delegation of Naval Postgraduate school (NPS, U.S.A.) on Functional Nanomaterials.	February 07, 2011
19. Invited Talk on “Metal oxide nanomaterials in sensors and biomedicine”at University of Trieste, Department of Materials (Nanomaterials and Nanotechnology division), Italy	November 23, 2010
18. Talk entitled “Functional nanomaterials for healthcare applications” at ICTP, Seminars of Physics of the Living State (Applied Physics Scientific Section) Trieste, Italy	November 19, 2010

17. Invited talk entitled "Novel synthesis routes to magnetic nanoparticles for applications in biomedicine" at International Conference on Nanotechnology and Medical Sciences" (ICNAMS-2010), Kolhapur, India	October 22, 2010
16. Talk at CEP course on "Protective Clothing" by DEBEL (DRDO), Bangalore.	September 20-24, 2010
15. Talk entitled "Cobalt nanoparticles doped emeraldine salt of polyaniline as a room temperature magnetic semiconductor" at the International Workshop and Symposium on the Synthesis and Characterisation of Glass/ Glass-Ceramics (IWSSCGGC-2010), Pune, India	7-10 July 2010
14. Invited talk at Banaras Hindu University (BHU, India) on "Nanomaterials in Therapeutics"	April 6, 2010
13. Invited talk at the International Conference on Recent trends in Nano and Bio-science Hyderabad, India.	Feb.24-26, 2010
12. Invited talk at the DAE-BRNS conference on PLD 2009 at IIT-Madras, India	December 2-4, 2009
11. Invited talk at Conference on "Advanced diagnostics and drug-delivery at the nanoscale, Trieste, Italy	October 13-15, 2009
10. Talk at International Workshop on Nanotechnology and Advanced Functional Materials, National Chemical Laboratory, Pune, India	July 9-11, 2009
9. Invited Talk at "Training Course on Molecular Design and Computer-Assisted Combinatorial Chemistry" (8 to 12 June), organized by ICS-UNIDO and in cooperation with SISSA, at SISSA, Trieste, Italy.	June 08-12, 2009
8. Talk at University of Rouen, Université de Rouen Cedex-FRANCE	May 29, 2009
7. Talk at ICTP, Seminars of Physics of the Living State (Applied Physics Scientific Section) Trieste, Italy.	June 03, 2009
6. Plenary Session Talk at "Symposium on Nanomaterials and their Applications" (SNMA2009) at FCP, Pune.	March 4-6, 2009
5. Visited Indian Academy of Sciences Annual meeting, New Delhi, India for release of book "Lilavati's Daughters".	October 31 – November 2, 2008
4. Visiting Scientist as a Regular Associate of International Centre for Theoretical Physics, Trieste, Italy	May 1 – June 12, 2008
3. Invited Talk at Materials Research Society-Singapore (MRS-S) 2008, Singapore	February 25-27, 2008
14. Invited talk at PLD 2007 Conference, Rajkot, India	October 3-5, 2007
2. Presentations at International Conference on Materials for Advanced Technologies (ICMAT-2007), Singapore	June 30 – July 6, 2007
1. Plenary session talk at International Nanobioscience Conference (INBC-2006), Pune, India	6-8th August, 2006

**i) Details of Research Scholars (perceiving Ph. D/ M. Phil/ Any other degree)**

Sr. No.	Name of Student	Degree	Title of thesis	Date of registration	Name of University and date of award
1.	Mona Jani	Ph.D. (Physics)	Manganite Nano particles: Synthesis & Applications	Completed and awarded Ph.D. on 18 <sup>th</sup> February, 2010	Pune University Completed
2.	Shadie Hatamie	Ph.D. (Physics)	Synthesis of Metal & Metal Oxide Nano particles for possible applications	Completed and awarded degree on 2 <sup>nd</sup> September, 2011	Pune University Completed
3.	Rohini Kitture	Ph.D. (Physics)	Synthesis of Oxide Semiconductor Nano Materials for Degradation of Dyes	24.03.2008  awarded degree on 30 <sup>th</sup> December, 2013	Pune University Completed
4.	Sandip Dhobale	Ph.D. (Physics)	Metal Oxide Nano Materials for Chemical & Biological Sensing	17.10.2008 awarded degree on 25 <sup>th</sup> February, 2014	Pune University Completed
5.	Shilpa Kaskar	M. Phil. (Electronic-Science)	To Explore Nano Materials for Solar Cell Applications	03.10.2008 Completed M.Phil. on 15 <sup>th</sup> April, 2013	Pune University Completed
6.	D. P. Londhe	M. Phil. (Electronic-Science)	Approach to magnetic sensors using manganite nano particles	April 2007 Completed and awarded M.Phil. on June 22, 2009	Pune University Completed
7.	Rupali Waichal	M.Sc. (PPPR) (Electronic-Science)	Synthesis and characterization of cuprous oxide nanoparticles synthesized by electrochemical method and its application as a Humidity sensor	25.07.2009 Completed and awarded degree on 27 <sup>th</sup> August, 2012	Pune University Completed
8.	Nageswar a Rao	Ph.D. (Physics)	Fiber optics based Magnetic/ Electric field sensors using Nanomaterials	degree 15 <sup>th</sup> May, 2015	DIAT Completed
9.	Umesh Nakate	Ph.D. (Physics)	Metal oxide nanostructures for gas sensing and photo catalytic applications	10-52-031 Completed and degree awarded on 6 <sup>th</sup> April 2016	DIAT Completed
10.	B. Vijaya Bhaskara Rao	Ph.D. (Physics)	Nanomaterials for applications in drug delivery (Sponsored candidate on my project given by Department of	Since October 2011 Completed and degree awarded on	DIAT Completed



			Science and Technology)	16 <sup>th</sup> October 2017	
11.	Shankar Gaware	Ph.D. (Physics)	Nanomaterials-based Biosensors and sustained drug delivery	Since July 2012 Completed 2018	DIAT Completed
12.	Vaishali Rawat	Ph.D. (Physics)	Metamaterials : fabrication and testing	Since July 2012 Completed 2018	DIAT Completed
13.	Dyandeo Pawar	Ph.D. (Physics)	Optical Fiber based sensing	Since July 2013 Completed 2019	DIAT Completed
14.	Preetam Bala	Ph.D. (Bio Sciences and Technology)	Nanomaterial drug complexes for wound healing	Since July 2013 Completed 2020	DIAT Completed
15.	Chetan Chavan	Ph.D. (Bio Sciences and Technology)	Nanomaterials drug complexes for therapeutic applications	Completed 2020	DIAT Completed
16.	Vivek Kale	Ph.D. (Physics)	Hazardous molecules sensing using metamaterial-based resonators	Completed in May 2023	DIAT Completed
17.	Rajat Srivastava	Ph.D. (Physics)	Machine Learning-Assisted High Frequency Ring Resonator Sensors for Industrial Applications	Thesis Completed in May 2024	DIAT Completed
18.	Shravani Kale	Ph.D. (Physics)	Tunability of $Ti_3C_2T_x$ MXene by Various Synthesis Routes and its Applications	Thesis Completed in December 2024	DIAT Completed
19.	Akshara R	JRF	TBC	Since 2023	DIAT
20.	Mandar Ghaisas	JRF	TBC	Since 2023	DIAT
21.	Vijay Pratap Mall	Ph.D.	Evaluation of lifetime of explosives and propellants using physical methods and tools	Since 2021	DIAT (Basically Scientist "E", HEMRL-DRDO)
22	Jaising Pednekar	Ph.D.	TBC	2023	DIAT (Basically Scientist "F" , RDEE-DRDO)

**ii) List of M.Tech Students**

Sr. No.	Name of Student	Degree	Title of thesis	Date of Commencement and Completion	Name of University
1.	Swati Gupta	M.Tech Project	Incorporation of nanofluids in Optical fibers for sensing applications	June 2010 to April 2011	DIAT University
2.	Wg. Comm. Walasang	M.Tech Project	Laser Communication for last leg signaling	June 2010 to April 2011	DIAT University

3.	Anupam Bharadwaj	M.Tech Project	Lithium Niobate nanoparticles for electro-optic applications	July 2011 to June 2012	DIAT University
4.	Hamanjeet Singh	M.Tech Project	Laser-assisted synthesis and manipulation of nanomaterials	July 2011 to June 2012	DIAT University
5.	Sandip Khatri	M.Tech. Project	Graphitic oxides and Indium oxide based optical sensors	July 2012 to May 2013	DIAT University
6.	Anusree Kandoth	M.Tech. Project	Optical fiber based sensors	July 2012 to May 2013	DIAT University
7.	Tuhina Oli	M.Tech. Project	UWB antenna design and testing	July 2013 to May 2014	DIAT University
8.	Sreevalsen	M.Tech. Project	Optical fiber based sensors for SHM applications	July 2013 to May 2014	DIAT University (done at RCI Hyderabad)
9.	Vihang Nadkarni	MTech Project	Metamaterials for applications in sensors	July 2014 to May 2015	DIAT University
10.	Jena Maheshwar	MTech Project	Nanomaterials for EMI applications	July 2014 to May 2015	DIAT University
11.	GNVS. Kasi V Rao	M.Tech Project	Laser guided landing of a UAV	July 2015 to May 2016	DIAT University
12.	Rucha Sarwandnya	ME student	Development of electronics for metamaterial sensors.	July 2015 to May 2016	Pune University
13.	Debika Debnath	M.Tech Project	Development of drug conjugated gold nanoparticles for H1N1 infections and sensing	July 2015 to May 2016	DIAT, along with IGIB, New Delhi
14.	Shiniwas Mane	M.Tech Project	Active Indicator Based Fiber Optic Gas Sensor	July 2015 to May 2016	DIAT
15.	Nihar Vaish	M.Tech Project	Nanomaterials functionalized metamaterials for selective gas sensing	July 2016 to May 2017	DIAT
16.	Ankit Malviya	M.Tech Project	FBG sensors for structural health monitoring : torsion measurements	July 2016 to May 2017	DIAT
17.	Abhay Yadav	M.Tech Project	Plasmonic based SPR sensors for CBW diagnostics	July 2017 to May 2018	DIAT (parent organization : DRDO)
18.	Farooq A. Dar	M.Tech Project	Plasmonic based SPR sensors for CBW diagnostics	July 2017 to May 2018	DIAT (parent organization : DRDO)
19	Sweta Rath	M.Tech. (Sensor Technology)	Design and Development of a Resonator based Bio-sensor for Detection of NS1 Antigen	August 2018 – May 2019	Parent University : DIAT University
20	Pradipta Datta	M.Tech. (Sensor Technology)	Pulsed laser deposited Lithium niobate thin films and study of their non-linear properties	August 2018 – May 2019	Parent University : DIAT University
21	Rajat Srivastava	M.Tech. (Sensor Technology)	SAW Devices for Sensing	July 2019- May 2020	DIAT
22	Srijeet Srivastava	M.Tech. (Sensor Technology)	Machine learning and AI development for	July 2019- May 2020	DIAT

		Technology)	metamaterial-based sensor		
23	Anagha Gayathri	M.Tech. (Sensor Technology)	Lithium Niobate based photonic devices : fabrication and testing	July 2019- May 2020	DIAT
24.	Abhilash Reddy	M.Tech. (OCP)	Development and Testing of smart Pulse Oximeter	July 2020- May 2021	DIAT
25.	Aniket Wankhede	M.Tech. (OCP)	Working with SAMEER- Mumbai	July 2020- May 2021	DIAT
26.	Shwetha P.	M.Tech. (Sensor Technology)	Working with NPOL-Kochi	July 2020- May 2021	DIAT
27.	Vaibhav Sharma	M.Tech. (LEOC)	Simulation of photonic devices	July 2020- May 2021	DIAT
28.	Ankit Bharadwaj	M.Tech. (LEOC)	Development of optical device for healthcare parameter measurements	July 2021- May 2022	DIAT
28.	Hiteshu Sharma	M.Tech. (Sensor Technology)	Development of sources and detectors for metamaterial-based sensors	July 2022- May 2023	DIAT
29.	Chinmai Mysorkar	M.Tech. (Sensor Technology)	Development of software and AI-ML based algorithms for non-invasive measurements	July 2022- May 2023	DIAT
30.	Aman Gupta	M.Tech. (Sensor Technology)	Design and Development of Tactile sensors for robotic applications	July 2023- May 2024	DIAT (basically a Indian Navy Student)
32	Binu Nair	M.Tech. (Sensor Technology)	Improvements in the hardware and software of non-invasive healthcare diagnostic kits for NIPL	July 2023- May 2024	DIAT (basically a officer from Ordnance Factory, Gol)
33	Uthra R	M.Tech. (Sensor Technology)	TBC	July 2024- May 2025	DIAT
34	Amrutha Ajith	M.Tech. (Sensor Technology)	TBC	July 2024- May 2025	DIAT
35	Rohan Sharma	M.Tech. (Sensor Technology)	TBC	July 2024- May 2025	DIAT

**iii) List of Students guided for Summer Training (since tenure at DIAT, Pune)**

Sr. No.	Name of Student	Degree	Title of work done at DIAT	Date of Commencement and Completion	Name of University
1.	Fahad Alam	M.Tech – Nanotechnology student	Nanofluids for biomedical applications	May 16 – July 15, 2011	Parent Institute, AMU, India
2.	Dhaval Suri	M.Sc. Physics student of	Metamaterials: synthesis and applications	November 2011 to March 2012	Parent University: Pune

		Pune Univeristy			University, Pune
3.	S Abraham Sampson	M.Tech – Nanotechnology Final year Dissertation work	Oxide nanoparticles for sensing toxic gases	January 2012 till June 2012	Parent University : NIT Kurukshetra
4.	Kalyani Chordia	M.Sc. Student from Fergusson College	Synthesis and testing of Raktchandani:ZnO / TiO <sub>2</sub> nanoparticles for therapeutics	March 2012 till date	Parent University : Pune University
5.	Students of Dr. Pant, Garware college	M.Sc. students from AG college	Microwave synthesis and applications of Lithium Niobate	August 2012 – July 2013	Parent University : Pune University
6.	Pankaj kumar Yeneppe	M.Sc. Student from Fergusson College	Manganite doped carbon-based systems for spintronics applications	October 2013 – December 2013	Parent University : Pune University
7.	Harshita S.	Master's Student in at Center for Atomic and Molecular Physics	Studies on non-linear optical properties of photonics materials at nano-level	Jan 2014 – May 2014	Parent University: Manipal university, Manipal
8.	Sagar Shende	M.Sc. Photonics	Fabry-Perot Interferometer Based Voltage Tunable Electro Optic sensor using LiNbO <sub>3</sub> for Probable industrial Applications	Jan 2014 – March 2014	Parent University: DEPARTMENT OF PHYSICS (Photonics)  RAJARSHI SHAHU MAHAVIDYALAYA, LATUR
9.	Prashant Pimpliskar	Student (4th year), Centre for Converging Technologies,	Using Zinc Oxide nanoparticles and assemblies for biosensing applications	With Anup Kale Feb 2014 – July 2014	Rajasthan University, Jaipur
10.	Pavitra S.R.	Master's Student in at Center for Atomic and Molecular Physics	Studies on lanthanum tantalate non-linear optical properties of photonics materials at nano-level	With Dr. Ravikant Choubey June 2014 – August 2014	Parent University: Manipal university, Manipal
11	Deepika Bharatula	B.Tech 2nd Year	Studies on metamaterials and nanomaterials for sensing applications	July 2014 – August 2014	SRM University Chennai
10.	Ashish Awasthi	Student (4th year), Centre for Converging Technologies	Nanomaterials for drug delivery and biosensing	August 2014 – Feb 2015	Rajasthan University, Jaipur
11	Dhiraj Bhavsar	Completing PhD from SASTRA Univ.	Nanomaterials for drug delivery	August 2014 onwards – March 2015	SASTRA Univ.

12.	Pavitra S.R. (applied again for 2 <sup>nd</sup> tenure)	Master's Student in at Center for Atomic and Molecular Physics	Tunable refractive index and distributed evanescent field modulation in PCF for fuel adulteration sensor	With Dr. Ravikant Choubey Jan 5, 2015 – May 18, 2015	Parent University: Manipal university, Manipal
13.	Varun Nair	Master's student in Dept of Physics and Nanotechnology.	Nanomaterials for EMI/EMC applications	Since May 2015 – July 2015	Parent University: SRM University, Kanchipuram
14.	Vishwanath	Master's student in Dept of Physics	Study of H <sub>2</sub> S sensing using Gold nanoparticles via metamaterial approach	October 2015 – March 2016	Parent University: Fergusson College, Pune University
15.	Mithali K Chengappa	M.Tech. Materials Science	Carbon nanocomposites for drug delivery applications	February 2016 – March 2017	Parent University: University of Mysore
16.	Swapneel Thakkar	M.Tech. Materials Science	Carbon nanocomposites for EMI/EMC	February 2016 – March 2017	Parent University: University of Mysore
17.	Rucha Sarvadnya	M.E. – Electronics	Design and Development of electronics for metamaterials sensor	Jan 2016 – June 2016	Parent University: Pune University
18.	Kasturi Rokade	M.Sc. – Nanotechnology	Si-based nanomaterials for Drug Delivery and imaging applications	August 2017 – June 2018	Parent University : Kolhapur University
19.	Ashutosh Kinikar	B.E. E&TC	Managntie nanomaterials with Optical Fibers for low-magnetic fieldsensing	August 2017 – May 2018	Parent University : Pune University
20	Pratik Bhagwat	M.Sc. Physics	Carbon nanocomposites for EMI/EMC	August 2018 – May 2019	Parent University : Pune University
21	Siddhi Shedge	M.Sc. Physics	Drug-loaded Au/Ag nanoparticles for enhanced antimicrobial activity	August 2018 – May 2019	Parent University : Pune University
22	Soniya Prabhune	M.Sc. Physics	Cancer therapeutics usinf drug loaded Au/Ag nanoparticles	August 2018 – May 2019	Parent University : Pune University
23	Kaushik Yeola	M.Sc. Physics	Graphene and porous silica based polymer composites for electromagnetic shielding	August 2018 – May 2019	Parent University : Pune University

24	Pratik Bhagwat	M.Sc. Physics	Carbon nanocomposites for EMI/EMC	August 2018 – May 2019	Parent University : Pune University
25	Swapnali Rabade	M.Sc. Physics	Metal Oxide based sensors	August 2019 – May 2020	Parent University : Kolhapur University
26	Anushka Mahadik	M..Tech. BioTechnology	Drug-mediated synthesis and delivery studies	August 2019 – May 2020	Parent University : MIT-ADT University
27.	Ashima Khanna	M..Tech. BioTechnology	Chitosan-Curcumin based systems for antimicrobial testing	August 2019 – May 2020	Parent University : MIT-ADT University
28.	Saipriya Kurapati	M..Tech. BioTechnology	Microneedle-based drug delivery system	August 2019 – May 2020	Parent University : MIT-ADT University
29.	Ashlesha Mahadar	M..Tech. BioTechnology	Microneedle-based drug delivery system	August 2019 – May 2020	Parent University : MIT-ADT University
30	Anish and Sourav	M.Sc. Physics	Venom detection using metal oxide nanoparticles	August 2019 – May 2020	Parent University : Pune University – Modern College
31.	Prajakta Kulal	M.Tech. Chemical Engineering	Silver nanoparticles based formulations	September 2020-December 2021	Parent University: VIT, Pune
32.	Samruddhi Dhamal	B.Tech In Chemical Engineering from	Nanoparticles of Natural ingredients for healthcare applications	September 2022 – June 2023	Parent University: VIT, Pune
33	Sakshi Hole	M.Sc. BioTechnology	Synthesis of Starch nanoparticles for medical theapeutics	April – June 2024	Parent Univeristy : Fergusson College Pune

**iv) List of Students guided for Seminars from MILIT, IDS**

Sr. No.	Name of Student	Degree	Title of work done at DIAT	Date of Commencement and Completion	Name of University
1.	Lieutenant Udai Singh Rana	NTSC – 36	Application of Nanotechnology for explosives and propellants	2017	Indian Navy MILIT, Pune
2.	Lieutenant Akshay Singh	NTSC-35	Nanomaterials and their applications in defence	2016	Indian Navy MILIT, Pune

**15. Hobbies and Extra-curricular activities:**

**Running Marathon, Long-distance Cycling, Car Rally participations, Writing Blogs (Blogger) and Social activities through various social forums for promoting Science and Technology to general masses of our country.**