

Rohit Srivastava, FNASc, FNAE, FAMS, FRSC, FRSB
Vigyan Shri 2024
Himanshu Patel Chair Professor
Dr. Abdul Kalam National Fellow,
Dr. Shanti Swarup Bhatnagar Prize
Department of Biosciences and Bioengineering,
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Prof. Rohit Srivastava is currently working as a Himanshu Patel Chair Professor and leading the NanoBios lab at the Department of Biosciences and Bioengineering (BSBE), Indian Institute of Technology, (IIT) Bombay. Prof. Srivastava completed his BE in Electronics Engineering from VNIT Nagpur in 1999 with distinction and was the recipient of a scholarship of merit for graduating students for the year. He joined Tata Consultancy Services, SEEPZ, Mumbai for a short duration of a year. Not finding satisfaction in what he was doing, he decided to complete higher studies in the US. He subsequently went on to finish a Master of Science and a Ph.D. in Biomedical Engineering from Louisiana Tech University, Ruston, LA, USA for which he received the best student of the year award in 2005. His specialization lies in POC Diagnostic devices, Biomedical Microsystems devices (MEMS), nanoengineered biosensors, photothermal therapy in cancers and nanoengineered orthopedic applications. His lab has graduated 50+ Ph.D. students and 90+ Master's students at IIT Bombay. Currently, his lab at IIT Bombay comprises 5 PhD students, 6 Master's students, 2 post-docs, 20 interns and 12 staff. His lab has funded projects across all domains, from point-of-care diagnostic devices to biosensors to cancer nanotechnology to MEMS drug delivery devices.

Prof. Srivastava's lab in collaboration with Biosense Technologies Pvt Ltd have already developed and commercialized "UChek" a portable urine analysis system based on the mobile platform and have also made a low-cost reader for quantitatively analyzing urine dipsticks for which he has received the DBT Biotech Process and Product Commercialization Award 2015 and the OPPI Young Investigator Award 2014. He was awarded the prestigious Vasvik Award 2013 for Biological Sciences and Technology for Suchek, which is an indigenous, accurate, low-cost glucometer supported by the Indian Council of Medical Research. Prof. Srivastava was the proud recipient of the Bill and Melinda Gates Foundation GCE Phase 1 for innovative work on drug delivery using microneedles. Prof. Srivastava's lab was placed third in the prestigious Healthcare Innovation World Cup organized by HIT Lab on solutions to the management of diabetes with a cash award of \$5000. The Welcome Trust UK has further funded this project for making an affordable point-of-care reader for critical care analytes. Prof Srivastava's lab was also the winner of the prestigious 'Samsung Innovation Award 2012' organized by IIT Delhi (August 2012) for innovation 'Drishti which was transferred to Titan Eye for further development. Prof. Srivastava was conferred the Sr IYBA award in May 2013. He received the INAE Young Associateship in 2013. He subsequently received the prestigious INAE Young Engineer Award 2010. He was also the recipient of the prestigious DBT-IYBA 2009 award. He was elected a Member of the National Academy of Sciences, 2011 and a Member of the Royal Society of Chemistry in 2017. Further, he was awarded the Young Investigator awards from IIT Bombay (2010), DAE (2006) and DST (2006) and was also the recipient of technical awards from Intellectual Ventures Asia Pte Ltd. Prof Srivastava was the recipient of the prestigious Tata Innovation Fellowship Award from DBT for his translational work on diagnosing orthopedic implant-related infections. He was also awarded the prestigious Shri Om Prakash Bhasin Award 2018 for excellence in Health and Medical Sciences. He is honored to be part of the compendium featuring '75 under 50 Scientists Shaping Today's India' published by Vigyan Prasar, Department of Science and Technology, Government of India' 2022. He has also been awarded the DBT National Bioscience Award for his efforts in translating technologies from the lab. He has also been awarded the prestigious NASI Reliance Industries Platinum Jubilee Awards 2018 for Application Oriented Innovations in Physical Sciences. His efforts have been recognized nationally and internationally and he was elected Fellow of the National Academy of Sciences, India (FNASc) 2019, Indian National Academy of Engineering (FNAE) 2022, Royal Society of Chemistry (FRSC) 2019, London and Royal Society of Biology (FRSB) 2019, London. He has also been elected as an Eminent Scientist as Fellow (FAMS) of the National Academy of Medical Sciences (NAMS) in Nov. 2022.

For all his efforts towards the development of affordable medical devices, he was awarded the Dr. Shanti Swarup Bhatnagar Prize for Science and Technology in Medical Sciences in the year 2021 and the very prestigious Rashtriya Vigyan Puraskar – Vigyan Shri 2024 for Technology and Innovation.

More than 280+ of his current ideas have been submitted as patent and design applications to the US and Indian Patent Office with more than 80 Granted and several published and under review. In a short duration of 19 years at IIT Bombay, Prof. Srivastava has already published in more than 300+ international journals, books and books chapters and 100 international conference proceedings with an **h-index of 51**.

Prof. Srivastava's extensive array of patents represents a significant leap forward in the intersection of healthcare, technology, and innovation. His work encompasses a diverse range of solutions designed to tackle some of the most pressing challenges in modern medical practice. For instance, his invention of an ultrasound probe cover with a pre-filled pouch addresses the critical issue of cross-contamination, offering a safer diagnostic environment. The syringe cap/needle guard patent directly confronts the occupational hazard of needlestick injuries, providing a safer working environment for healthcare workers.

Beyond individual safety devices, Prof. Srivastava's patents extend into the realm of enhancing patient care through technology. His development of a portable device to detect saltiness in food materials and a highly sensitive non-enzymatic lactate sensor cater to both preventive healthcare and critical care management, illustrating the versatility of his innovative approach. The Nebiro nebulization device and the digital stethoscopes are examples of how Prof. Srivastava merges technology with patient care to facilitate better health outcomes, demonstrating the potential for remote monitoring and telemedicine in reducing barriers to healthcare access. Moreover, Prof. Srivastava's work in developing smart dressings and responsive medical devices highlight a forward-thinking approach to patient monitoring, wound care, and surgery. These innovations not only promise to enhance the efficacy of treatments but also aim to bring about a paradigm shift in how patient care is delivered, emphasizing minimally invasive techniques and real-time health monitoring.

Prof. Srivastava's patents in wearable technologies and health monitoring systems showcase a deep understanding of the needs of both patients and healthcare providers. By integrating AI and machine learning into healthcare solutions, such as in the Remote Intelligent Observation System and the FLORIOS IV flow monitoring system, he leverages cutting-edge technology to anticipate and respond to the dynamic conditions of patient health, offering a glimpse into the future of personalized and predictive healthcare. Prof. Srivastava's credentials as a leader in the field of biomedical engineering and healthcare innovation are highlighted through his involvement in various industry-sponsored projects, which showcase a robust collaboration between academia and industry aimed at developing advanced healthcare solutions. These projects include:

1. RIOS-1 and RIOS-2, sponsored by Getinge India Ltd., focused on developing Remote Intelligent Observation Systems to enhance ICU monitoring through real-time data analysis, demonstrating a commitment to leveraging technology for improving patient care.
2. Nebiro, another project with Getinge India Ltd., led to the creation of a smart nebulizer designed for portability and ease of use, particularly for patients with respiratory conditions, reflecting an innovative approach to respiratory care.
3. Auskey®, funded by Yashraj Biotech Ltd., resulted in the development of an electronic stethoscope, enhancing diagnostic accuracy and medical practice through advanced audio capabilities.
4. Quitsure® Clinical Trial, supported by Rose Trust/Bajaj, focuses on the clinical trial of a digital therapeutic app designed to assist individuals in quitting smoking, illustrating a multidisciplinary approach to tackle public health issues through digital solutions.

These projects not only underscore Prof. Srivastava's commitment to advancing medical technology and healthcare solutions but also his ability to foster meaningful collaborations between academia and industry to address critical medical challenges. Each project contributes significantly to the fields of

medical devices, patient care technologies, and digital health solutions, emphasizing practical applications of research in improving healthcare outcomes.

He has also been instrumental in encouraging 10+ of his students to set up Companies either through a TBI or otherwise and is himself a co-founder on 5 startups' with more than 3 women entrepreneurs co-founders and one such startup product, CareMother has achieved self-sustainability to focus further on last mile and women health issues through a new entity "Doto Health Pvt Ltd" in India to take this forward. CareMother is recognized and awarded by The Hon President of India, Her Majesty The Queen of England etc. CareMother is a digital health startup offering innovative healthcare solutions to healthcare providers and pregnant women in India and the developing world. Their mission is to create equal opportunities of quality care for women and their vision is to become India's best women's health solutions company by 2030. They are trying to address the problem with women's pregnancy with early detection of high risk, AI powered medical devices and remote patient monitoring solutions. They started high risk detection and management with point of care devices kit for prenatal checkups at the last mile. Further considering the amount of still and preterm birth incidences they built and offered AI assisted wireless fetal monitoring solution. With both products they have served more than 500,000 pregnancies in the last 5 years and could screen several high-risk pregnancy cases. With focus on fetal monitoring currently more than 1000+ OBGYNs are using CareMother fetal monitor and app and serving 150,000+ expecting mothers and offered 300,000+ tests in 24 cities of India within the period of 5 years. Along with clinic fetal monitoring CareMother also launched its home monitoring solution on rental basis across 8 cities of India in April 2022 with one of the leading pharmaceutical companies in India and served more than 30,000 tests so far. Their high-risk pregnancy management platform for public health application is being used in India, Afghanistan, Nigeria and recently in Bangladesh.

Prof. Srivastava's lab is focusing on developing technologies that can be commercialized and brought to use for the common man in India.

CURRENT POSITION: Himanshu Patel Chair Professor and Former-Head of the Department of Biosciences and Bioengineering at IIT Bombay

Administrative Responsibilities

- **Head of Department, 2019-2022**
- **Core Committee Member of WRCB, IIT Bombay, 2016-2021**
- **Core Committee Member for Desai Sethi Centre for Entrepreneurship, IIT Bombay for 2018-2021**
- **Committee Member for Institute Biosafety Committee, IIT Bombay for 3 years, 2019-2022**
- **Member for Faculty Search Committee for last 6 years at BSBE**
- **Convener for Institute and Dept Best Thesis Award Committee for last 6 years at BSBE**
- **Member of Department Space Committee for last 6 years at BSBE**
- **Member of Department Post Graduate Committee for 3 years at BSBE**
- **STAG Member at DBT New Delhi for nanobiotechnology for 5 years, 2016-2021**
- **TEC Member for DBT Nanobiotechnology, New Delhi for 5 years, 2016-2021**
- **Chairman of Indo-Russia Committee in DBT New Delhi for 6 years**
- **TEC Member of DBT Indo Australia Committee at DBT New Delhi for 6 years**
- **TEC Member of all committees at BIRAC, New Delhi for 10 years, 2013-onwards**
- **TEC Member of BioCare, DBT New Delhi for 6 years**
- **Task Force member of ICMR Innovation Group for 6 years**
- **Task Force member of DST Instrumentation Development Programme for 6 years**
- **Task Force member of MHRD Stars Program**
- **Chairman of BIRAC BIG Diagnostics Panel**
- **TEC Member of DBT Bioengineering Scheme**
- **Member of BIRAC GYTI Review Committee**
- **Member of UM-DAE SAC**
- **Member of INAE Young Engineer Award Committee**
- **Member of NASI Young Scientist Award Committee**

- **Member of NASI Reliance Industries Platinum Jubilee Award Committee**
- **Member of BIRAC TAG for Special Call**
- **Member of DBT BIRAC Covid Cal**
- **Member of IDAPHT IIT BHU**
- **Member of CBMR SAC - Current**
- **Member of BVG SAC - Current**
- **Member of BIRAC Bionest Committee**
- **Member of BIRAC Sparsh Committee**
- **Member of BIRAC Special Call on Covid**
- **Selection Committee Member for IIT Jammu, IIT Indore, IIT Hyd, IIT BHU**
- **Chairman of APDC, NIPER Guwahati - Current**
- **Member on Modi Prix Gallien Foundation Awards - Current**

EDUCATION:

PhD in Biomedical Engineering

Louisiana Tech University, Ruston, LA, USA Aug 2000- May 2005 with a GPA of 4.0/4.0

Subjects: Human Physiology, Biomedical Instrumentation, BioMEMS, Fundamentals of Lithography, Thin Film Processes, Nano fabrication by Self-Assembly, Fundamentals of Microfabrication, Biomedical Optics, Fiber Optic Sensors, Principles of Polymers, and Statistics.

Research: Alginate hydrogels for encapsulation and stabilizing glucose oxidase enzyme towards an implantable glucose sensor under NIH grant (R01 EB000739-02).

Advisor: Dr. Michael J. McShane, Associate Professor of Biomedical Engineering at the Louisiana Tech University, Ruston, LA, USA

Master of Science (MS) in Engineering

Louisiana Tech University, Ruston, LA, USA Aug 2000 –May 2005 with a GPA of 4.0/4.0

Research: Design, fabrication, and characterization of a micromachined infrared Fabry-Perot Interferometer funded by Sandia National Labs under the MASINT (Measurement and Signature Intelligence) program and the National Science Foundation Grant No. 0092001 (“Micro/Nanodevices and Systems”)

Advisor: Dr. Michael J. McShane, Associate Professor of Biomedical Engineering at the Louisiana Tech University, Ruston, LA, USA

Bachelor of Engineering (BE) in Electronics Engineering

Visvesvaraya Regional College of Engineering, Nagpur, India, August 1999

Major Subjects: Design of Electronic Circuits, Microprocessors I&II, Control Systems, Digital Techniques, Digital Filters, Satellite Communication, Instrumentation, Communication Electronics.

Graduated First in Class with 79/100 marks

AWARDS AND RECOGNITION

Year	Award/Purpose	Agency/Organization which gave the award	Nature of the award
2024	Rashtriya Vigyan Puraskar - Vigyan Shri	Govt. of India	Sanad and Medallion at the hands of the Hon' President
2023	Prof H H Mathur Award for Excellence in Applied Sciences 2023	IIT Bombay	Cash Prize, Citation and most prestigious honor at IIT Bombay
2023	Himanshu Patel Chair Professor	IIT Bombay	Recognition in Institute
2022	Fellowship 2022	NAMS	Medical Science Fellowship
2022	Elected Fellow 2022	Science, Engineering and Medicine in India & Chemistry and Biology in UK	FNASc, FNAE, FRSC and FRSB
2021	Medical Sciences	Dr. Shanti Swarup Bhatnagar Prize	Recognition, cash prize, citation - Considered the highest honor in India for Health and Medical Sciences
2021	Elected Fellow	INAE	
2019	Abdul Kalam Technology Innovation National Fellowship 2019	INAE	Prestigious Fellowship
2019	Elected Fellow	NASI	FNASc
2019	Elected Fellow	Royal Society of Biology	FRSB
2019	Elected Fellow	Royal Society of Chemistry	FRSC
2018	Shri Om Prakash Bhasin Award for Excellence in Health and Medical Sciences	Shri Om Prakash Bhasin Foundation	Cash award, trophy and citation
2018	NASI Reliance Industries Platinum Jubilee Awards 2018	NASI	Cash award and a plaque
2018	Elected Member in 2018	RSC	MRSC

2017	Best research Award 2017	Cancer Research Society of India	Cash award and citation
2017	University Challenge winners 2017	DST – Lockheed Martin– Tata Trusts India Innovation Growth Programme (IIGP) 2.0	Citation and Project Award for Rs 10 lacs
2017	Gandhian Young Technological Innovation Award at Rashtrapati Bhavan	BIRAC, Shristi and ICMR	Technological Edge Award
	Development of therapeutics for MDR-TB	Tata Trusts, India Health Fund	Project award for \$300,000
2016	National Bioscience Award 2016	DBT	Cash award, citation and highest honor of DBT
	Development of wearable patch for uterine activity measurement	Stars in Global Health, GCC, Canada	Project award for \$100,000
2016	<i>Most innovative field-tested prototype of a concept"</i> category for Innovation in Medical Technologies in conjunction with the AIF-Stanford Medicine Symposium	Stanford MedTech Award 2016	Citation and Trophy
2016	Polymer Microneedles based vaccine deliver patch	Lockheed Martin Corporation, US and Department of Science and Technology, Govt of India	Gold Medal 2016
2016	Gandhian Young Technological Innovation Award 2016 at Rashtrapati Bhavan	IIM Ahmedabad, Shristi and Techpedia	Technological Edge Award Top 5
2015	Biotech Product and Process Development and Commercialization Award 2015	DBT	Cash Award and Recognition
2015	Gandhian Young Technological Innovation Award 2015 at Rashtrapati Bhavan	IIM Ahmedabad, Shristi and Techpedia	Technological Edge Award Top 5
2014	Biotechnology Entrepreneurship Student Team award 2014	DBT ABLE BEST 2014	Cash Award of INR 2,00,000 and certification

2014	Young Scientist Award 2014	OPPI Award	Cash award and a citation
2013	Tata Innovation Fellowship	DBT	Research grant plus salary support
2013	Sr IYBA award from July 2013	DBT IYBA 2013	Cash award and research grant of Rs 1 crore
2013	Award in the area of Biological Sciences and Technology 2013	Vasvik Award	Cash award and a citation
2013	Healthcare Innovation World Cup 2013	HIT Lab	3 rd prize overall amongst 150 entries with a cash award of \$5000
2013	Gandhian Young Technological Innovation Award 2013	IIM Ahmedabad, Shristi and Techpedia	Recognition
2013	Samsung Innovation Award 2012 for innovation 'Drishti: The universal eye glasses	Samsung India	Cash award of INR 1,50,000 and Trophy for Institute
2013	Phase 1 grant from May 2013	Gates Foundation	Recognition worldwide and \$100,000 project
2013	Young Associate Member from Jan 2013	INAE	Recognition from INAE, India
2011	Elected member of NASI Allahabad	M.N.A.Sc	Recognition
2010	Young Investigator Award 2010	IIT Bombay	Cash award and citation
2010	Young Engineer Award 2010	INAE	Cash Award + Citation
2009	Young Scientist Award 2009	DBT-IYBA	Cash Award + Research Grant + Citation
2006	Young Investigator Award	DAE-BRNS	Research grant for 10 lacs
2006	Young Investigator Award	DST	Research grant of 9 lacs
2010	Best Solution report (4 total)	IVA, Singapore	Cash award of \$32,000

2006	BOYSCAST Fellowship	DST	Fellowship for research work at Vanderbilt University, USA
2005	Best Thesis and Student Award	Latech, USA	Citation and cash award
1995-1999	Student of the year for 1995-1999	VNIT, Nagpur	Citation and cash award

JOB EXPERIENCE

Period	Organization	Designation/Nature of Work
Dec 2015 to date	Indian Institute of Technology Bombay, Powai, Mumbai	Professor Teaching MTech and PhD students, Guiding MTech and PhD students, administrative work for Dept, Writing proposals for extramural funding Ideas for patenting
Jan 2011 to date	Indian Institute of Technology Bombay, Powai, Mumbai	Associate Professor Teaching MTech and PhD students, Guiding MTech and PhD students, administrative work for Dept, Writing proposals for extramural funding Ideas for patenting
March 2007 to Jan 2011	Indian Institute of Technology Bombay, Powai, Mumbai	Assistant Professor Teaching MTech and PhD students, Guiding MTech and PhD students, administrative work for Dept, Writing proposals for extramural funding Ideas for patenting
Sept 2005 to March 2007	Indian Institute of Technology Bombay, Powai, Mumbai	Lecturer (sr. scale) Teaching MTech and PhD students, Guiding MTech and PhD students administrative work for Dept, Writing proposals for extramural funding Ideas for patenting
July 1999 to July 2000	Tata Consultancy Services, SEEPZ, Mumbai, India	Assistant Engineer/GEPS-PPME, Module Leader Maintenance of ARTEMIS weekly jobs. Quality Procedures conforming to the SEI-CMM Level 5.0

ACADEMIC PROJECTS:

Graduate

Ph.D.: Chemical sensors are important for monitoring chemical processes and biological systems. Glucose is, by far the most widely employed and continues to drive research toward better sensors.

Efforts towards immobilizing the sensing chemistry in a biocompatible polymeric matrix are also being pursued. In this work, alginate microspheres have been fabricated using an emulsification process with high surfactant concentration to form beads in the size range of 20-50µm. Using sodium alginate with calcium chloride for ionotropic gelation, dextran and glucose oxidase were encapsulated in the gel phase. To limit diffusion of the macromolecule from within the alginate matrix, the layer-by-layer self-assembly technique was used to coat the spheres with polyelectrolyte coatings. Leaching studies to assess the retention of the macromolecule confirmed that the application of multilayer thin films to the alginate microspheres was effective in reducing the total loss of the encapsulated material from the microspheres. The activity of the encapsulated glucose oxidase was also tested over a period of six months and was found to be stable. *In vitro* cytotoxicity tests conducted using NIH-3T3 cells indicate that chondroitin sulfate may be suitable for enhancing the biocompatibility of these systems for *in vivo* studies. These studies support the feasibility of using these microsystems for the development of long-term implantable glucose sensors.

MS: A broadband tunable filter for the infrared spectral region is desired for use as the wavelength-selective element in a miniature absorption spectrometer. The project presents the design, fabrication, packaging, and characterization of a bulk micromachined Fabry-Perot interferometer (FPI) for meeting this need. A novel approach to fabricate a MEMS-based tunable resonant cavity using two separate wafers bonded using a “lock and key” spacer design is outlined, with the goal of realizing electrostatically-actuated membranes from films predeposited on base substrates. This ability could enable the pursuit of MEMS devices without in-house CVD capability, after overcoming the shortcomings of bulk-micromachining. Through a combination of modeling and experimental measurements, it is demonstrated that the ability to produce MEMS devices by releasing membranes from films pre-deposited on substrates is highly susceptible to error in etching and packaging.

Undergraduate

- Worked on a part of a project titled “Bio-Telemetry System for Transmission of ECG Signals” at the Indian Institute of Technology, Kharagpur under Prof Saswat Chakraborty as a third-year project
- Final year degree project on "Optimizing Multi-Layer Perceptron (MLP) Artificial Neural Network (ANN) performance and application to Control of Non-Linear Dynamical System." under Asst Prof A P Gokhale.

Research Experience:

Graduate Research Assistant: Sept 2000 – May 2005, Institute for Micromanufacturing, Louisiana Tech University. Conducting research in the BioMINDS lab at IfM

Teaching Experience:

- **IIT Bombay:** Signals and Systems in BME (Fall Semester), Biomedical Microsystems (Spring Semester), Experimental and Quantitative Physiology (Spring Semester), BioNanotechnology (Fall Semester), BB101 (Spring Semester)

Ongoing Research Projects:

SI No.	Date of sanction and Duration	Title of Project	Funding Agency	Amount
1	Jan 2024- Jan 2026	WIPO global health innovation Fellows	WIPO	74,80,000

2	July - December 2024	POCT device feasibility study for two biomarkers for pregnancy	Edhaa innovations	14 lacs
3	July 2023 -December 2024	GlyASens: A handheld IoT enabled low-cost device for monitoring glycated albumin	BIG-BIRAC	50 lacs
4	July - December 2024	Development of on-chip solid-state chloride sensor for cystic fibrosis screening	IOE, IIT Bombay	9 lacs
5	July 2024- July 2026	Multiplexed point-of-care device for monitoring sodium and chloride	DBT	84,69,300
6	September 2023-December 2024	Applications of graphene quantum dots in medical diagnostics	TATA steel	50,16,000
7	September 2023-Feb 2025	Male infertility: A low-cost sperm count immunodiagnostic test along with a hydrogel formulation aiming enhanced sperm hyperactivation and capacitation	BIRAC BIG	50 lacs
8	September 2023-2024	Development of Direct lateral Flow Assay for Sperm count	NIDHI prayas	10 lacs
9	April 2023 - 6 months	Remote ICU Monitoring Phase 2	Getinge Medical India Pvt Ltd	45 lacs
10	Jan 2023 -for 5 years	Biodesign Centre - MEDIC	DBT	10 cr
11	Oct 2022- March 2024	Smart Wound Dressing Materials	YBL (Industry)	>1.5 Cr
12	Oct 2022- March 2024	GelFoam for Surgical Applications	YBL (Industry)	>1.5 Cr
13	Dec 2021- Oct 2024	Design and development of an affordable point-of-care test for glycated hemoglobin	BIRAC-ETA	60 Lac
14	March 2021-Oct 2024	Point of care test for Malnutrition Screening	ICMR-EXCELLENCE CENTER	50 Lac
15	Feb 2021 – Dec 2024	Centre of Excellence For Application of Technologies On Child And Maternal Health Under DBT (Department of Biotechnology New Delhi)	DBT	2 Cr between IITB and NE states

		Twinning Program Between IIT Bombay & North East States		
16	Jan 2020 – Jan 2025	UAct-Wearable Patch for Uterine Activity Measurement – Abdul Kalam Technology Innovation Fellowship	INAE-SERB	57 lacs
17	Feb 2020 - May 2024	Clinical Validation point of care diagnostic test for Cholesterol, Triglycerides, and HDL in whole blood	CRS Scheme from BIRAC	80 lacs

Completed Research Projects:

Sr. No.	Date of Completion	Title of Project	Funding Agency	Amount
1	March 2022-March 2023	Lukewarm water-soluble plastic	IRCTC CSR Funding	60 lacs
2	March 2022-March 2023	Affordable test for Iodine	Cytiva CSR funding	17 lacs
3	March 2022 – Sept 2022	Nano formulation development	Epigeneres Pvt Ltd	10 lacs
4	March 2022 – March 2023	Machine Operated Triage System – Proof of Concept Phase	Getinge Medical India Pvt Ltd (Industry) - CSR	40 lacs
5	Jan 2022 to Dec 2022	Cytotoxicity studies of Bio-pharma material	Applied materials (Industry)	\$25000
6	Oct 2020-Oct 2021	Developing an antiviral filter for ventilators	DST-SERB	25 lacs
7	Sep 2020-Dec 2022	Physical characterization of Drug Material	CIPLA(Industry)	25 lacs
8	Aug 2020 – Aug 2023	Affordable ‘On Demand’ Sonophoresis Based System for Pain Management in Elderly Patient	ICMR	50 lacs
9	July 2020-Dec 2020	Accessories for an affordable mask for preventing pandemic outbreak	DBT	20 lacs
10	Oct 2019 – Sept 2021	Affordable technology for sensing Cardiac Troponin I/T	ICMR	60 lacs
11	Sept 2019-Sept 2020	IoT Based Affordable Point-of-care test kit for detection of prediabetes and gestational diabetes –Clinical	WRCB	25 lacs

		Testing		
12	Jan 2019 – Jan 2021	Optimization and scale-up of lukewarm water-soluble and biodegradable plastic made up from agriculture waste	IMPRINT 2	50 lacs
13	Aug 2018-Aug 2021	Heat shock protein targeted biodegradable near-infrared light-responsive nanoparticles for photothermal ablation of cancer via Apoptosis	DBT National Bioscience Award	5 lacs every year
14	March 2018 – March 2019	Wearable for self-screening of cervical cancer	DST-IUSSTF	11 lacs
15	Feb 2018 to Aug 2019- for 18 months	Development of affordable testing strips and point-of-care reader for Cholesterol, Triglycerides, and HDL in whole blood	AIR Scheme from BIRAC	50 lacs
16	July 2017 for 18 months	Development of wearable patch for uterine activity measurement	GCC Canada	\$100,000
17	March 2017 to March 2020	Development, Evaluation & Scale-up of Non-invasive & Low-cost Rapid TB diagnostics	IIT Kanpur MHRD (IMPRINT scheme)	2.3 cr
18	March 2017 to March 2020	Development of aerosolized formulation (s) for Multi-Drug Resistance TB.	TATA TRUSTS	2 cr
19	March 2017 to Aug 2019	Sodium potassium Kanpuration: electro finder	IIT Kanpur MHRD (IMPRINT scheme)	1.7 cr
20	March 2016 to Aug 2019	Preclinical Evaluation Of Gold-Np Coated Plga/Pnvcl Based Cancer Therapy	DBT	43 lacs
21	March 2016- March 2017	Development and characterization of formulations against infectious diseases.	Industry Sponsored	10 lacs
22	Dec 2015 for 3 years	Development of a low-cost water monitoring kit for multiplex heavy metal detection based on aptamer sensors	DBT-IC IMPACTS	1.4 crore
23	March 2015 for 3 years	Development of a nanoengineered dual release graft for pain/inflammation management in osteoarthritis	DST NanoMission	60 lacs
24	March 2015 for 3 years	Nano-engineered biodegradable bone fixation device for	ICMR	40 lacs

		orthopedic applications		
25	Jan 2015 for 24 months	Smart Sense, Multianalyte sensing device for management of Diabetic ketoacidosis (DKA)	Wellcome Trust, UK	1.5 crore
26	Oct 2014 – March 2018	Photothermal Radiotherapy using Gold coated Nanoparticles (ORANANO-C)? A novel theranostic approach for Oral Carcinoma	Infosys Foundation	2 Cr
27	June 2014 for 3 years	U-Chek and its validation	DBT IYBA – Sr IYBA award	1 crore
28	May 2014- for 18 months	ACR strips and tracking CKD	GCC Canada	\$100,000
29	April 2014 for 3 Years	Portable device for detecting periprosthetic infections	Tata Innovation Fellowship	27 lacs
30	March 2014 for 18 months	Portable urine analysis system with strip reader	DST-IDP	50 lacs
31	Aug 2013 for 2 years	Glucose Monitoring device and strip Development	ICMR Glucometer Development Scheme	50 lacs
32	Oct 2012 for 2 years	Vaccine delivery using Microneedles	NPMASS, ADA	20 lacs
33	Aug 2010, 3 years	Smart-tattoo calcium sensors for monitoring milk fever in dairy cattle	DBT Bioengg	48 lacs
34	Aug 2010, 3 years Co-PI: Dr. D Bahadur	Nanoengineered Alginate Carrier Glucose Sensors Using Competitive Binding Resonance Energy Transfer Assays Based on Apoenzymes	BRNS	16 lacs
35	June 2010, 3 years	Nanoengineered Lab-on-a-Particle System.	DBT IYBA	42 lacs
36	June 2010, 3 years Co-PI: Dr. Gopal Kundu	Gold Nanostructures and polymeric nanoparticles for breast cancer therapy.	DBT Nanomedicine	30 lacs
37	Dec 2009, 3 years	NANOENGINEERED "SMART TATOO" LACTATE SENSORS	CSIR	15 lacs
38	Oct 2009	Co-Immobilization in Nanoengineered Polymeric Carriers as Biosensors	DBT	31 lacs
39	Sept 2009 for 3 years	Controlled Drug Delivery using Layer-by-Layer Self-Assembly	DST Nano Mission	48 Lacs

	Co-PI: Dr. D Bahadur	with Antibody Conjugated Magnetic PLGA Nanoparticles using Dual Drug Regimen for Breast Cancer Therapy		
40	Aug 2009	LBL for High Throughput Screening System	DST	9 lacs
41	March 2009	Controlled release of the immunomodulating agent from nanoengineered alginate carriers	BRNS-DAE	10 lacs
42	Oct 2008 and 3 years Co-PI: Dr. R Banerjee	Urease and Cresol Red Immobilized Alginate Microspheres as Optical Sensors for Urea Monitoring	ICMR	23 Lacs
43	April 2008	Nanoengineered Optical Bilirubin Biosensor	Philips Medical Systems	3 lacs

Technology transferred from Prof. Srivastava's NanoBios Lab:

1. Biosense Technologies Pvt Ltd, Thane – **Ucheck** *Urine Analysis System and Strips (commercialized)* (<https://www.biosense.in/ucheck.php>)
2. Biosense Technologies Pvt Ltd, Thane – **SYNC** *Glucometer and Strips approved (commercialized)* (<https://www.biosense.in/sync-glucometer.php>)
3. Biosense Technologies Pvt Ltd, Thane – **TouchHb** *Non-invasive Anaemia screening device (commercialized)* (<https://www.biosense.in/touchhb.php>)
4. CareNx Pvt Ltd, Navi Mumbai – **CareMother** *Kit and smart phone application for identification of risk-prone pregnancies in rural healthcare (commercialized)* (<https://CareMother.in>)
5. Biosense Technologies Pvt Ltd, Thane – **Smartsense**- *Critical Care Analyzer*
6. Dynansense Technologies Pvt Ltd, Mumbai – **Electrofinder**TM *Sodium Potassium sensing assay and Reader developed*
7. Shukla Ashar Pvt Ltd – **Aayudh** – *Green Nanoparticles for MDR-TB therapeutics*
8. Dynasene Technologies Pvt Ltd, Mumbai – *Stripless Glucometer*
9. CareNx Pvt Ltd, Navi Mumbai – *Mobile Phone Reader for Lateral Flow Assays*
10. Arthritis Research Pvt Ltd, Mumbai – *Nanoformulation for Bone Healing*
11. Dynansense Technologies Pvt Ltd, Mumbai – *CGMS glucose sensor system*

Innovative Technologies/ Products under development in Prof. Srivastava's NanoBios Lab:

1. **Uridsa**TM – *Albumin Creatinine Ratio Strips and portable Reader* validated at KEM Hospital and developed product has been demonstrated at Parliament House, New Delhi.
2. **Cholcheck**TM – *HDL, LDL, Total Cholesterol and Triglyceride detection Assays and Reader prepared* for a PACE BIRAC project (First in India). Secured PACE CRS grant for commercialization.
3. **PorFloR**TM – *Developed Strips and portable fluorescence Reader* for detection of orthopaedic implants associated infections biomarkers such as **C-reactive protein (CRP) and interleukin-6**

(IL-6) (Under clinical validation)

4. **HbA1C Lateral Flow Assay and Reader** prepared and validated at KEM Hospital. This technology is underway for transfer to student company.
5. **Glycated Albumin Assay and Reader** developed. Testing underway (First in India)
6. *Strips prepared and tested for determining Ectopic Pregnancy* (First in India).
7. *Novel Nano formulation developed for treating MDR TB* for TATA TRUST project (First in India)
8. **Vitamin B12 and D3 – Developed Assays and Reader.** Validation is underway in the lab.

Journal Cover Page:

- Research work³⁰ highlighted on the cover page of ACS Appl. Bio Mater. 2021, 4, 2, 1693–1703
- Research work⁸⁹ highlighted on the cover page of *Bioconjugate Chemistry*, 2018, 29, 1485-1792.
- Research work⁹² highlighted on the cover page of *Colloids and Surfaces B: Biointerfaces*, 2018, 172, 1-812.

Media Highlights:

- Research work⁸⁹ covered in media (*Research Matters*, May 19, 2019).
- Research work¹⁰¹ covered in media (*The Hindu*, April 08, 2017).
- Research work¹⁰⁴ covered in media (*The Hindu*, September 23, 2017).
- Research work¹²⁰ covered in media (*Nature India*, June 30, 2016).
- Research work¹⁴³ covered in media (*Nature India*, December 08, 2015; *Nature Index*, 2015).
- Research work¹⁴⁶ covered in media (*NDTV Interview*, January 24, 2015).
- Research work¹⁵² covered in media (*The Indian Express*, September 07, 2014).
- TB Nanodots work (Bill Gates fellowship) covered in media (*Hindustan Times* June 09, 2013).
- POC devices Uchek and SuChek are covered in media (*Mumbai Mirror*, October 30, 2014).

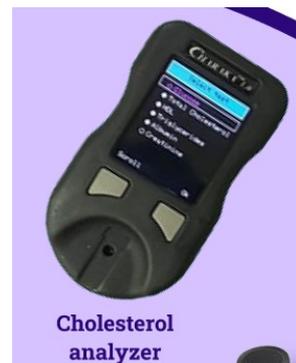
The notable outcomes from Prof. Srivastava’s lab are summarized below

S. No	Area	Notable Outcomes
1.	Affordable Point of Care Diagnostic Devices.	<u>Commercially viable medical technologies</u> Prof. Srivastava’s lab has developed several affordable point-of-care technologies. Some of these technologies were transferred to companies and some were commercialized through Prof. Srivastava’s student start-ups such as Biosense Technologies Pvt. Ltd, Dynasense Technologies Pvt. Ltd., CareNX Innovations Pvt. Ltd., Patanjali Pharma Pvt. Ltd., Mozen Technologies Pvt. Ltd.



Commercialized products

Point-of-care test for detection HDL Cholesterol and triglyceride affordable detection



Cholesterol analyzer

Ucheck: Designed and developed **affordable portable urine analysis system along with affordable strips**. Ucheck is a smartphone-based portable diagnostic system that measures **bilirubin, ketone, specific gravity, leukocytes etc. it can measure total (10+2) parameters** of routine urine analysis. Ucheck takes images at predetermined time intervals to detect color changes in urine strip parameter pad and give highly accurate results. **Ucheck has been transferred, commercialized and sold in the Indian market.**



- **SYNC:** Designed and developed a **Smart & All-in-one compact sized Glucometer for personal use. It is designed, developed and manufactured in India with most affordable glucose test strips available with it.** Tracking sugar levels is made easier and smarter with the Bluetooth technology. You can pair

the SYNC glucometer with Bluetooth and track all your test records in a simple graphical format. SYNC is an easy way to manage patients' blood glucose. **SYNC has been transferred, commercialized, and sold in the Indian market.**



- **TouchHb:** Designed and developed a non-invasive anemia screening system, to be used for semi-quantitative determination of hemoglobin, supplementing the clinical evidence in the *screening & monitoring of anemia at the point of care. The system uses the method of reflectance photometry and is suitable for use in hospitals, doctor's offices, and nursing homes. This technology has been transferred, commercialized and sold in the Indian market.*
- **CareMother:** Designed and developed an Android smartphone application for testing and analysis of various parameters to detect risk-prone pregnancies. The Stored data is shared with clinicians to identify the risk during the pregnancy and take immediate corrective actions to prevent any complications. *More than 35000+ pregnant women are tested in 500+ villages in 11+ states of India. The technology is commercialized by the Caremother (CareNX) and is available in the Indian Market.*





Products under commercialization

- **Smartsense:** Designed and fabricated *portable multianalyte reader and optical (Fluorescence, Absorbance) based assays for detection of Na^+ , K^+ , Cl^- , HCO_3^- , urea and glucose for the critical patients in ICU settings.* This technology has been transferred to industry and is currently under commercialization.



- **Uridsa™:** Designed, developed and clinically validated affordable non-invasive, *portable reader and colorimetric strips for detection of preeclampsia and chronic kidney disease.* It uses paper-based colorimetric assays to *detect albumin and creatinine in the urine sample.* This technology has been transferred to industry and is currently under commercialization.



Electrofinder™ and Fluofinder™: Designed, developed and clinically validated *optical reader and assays for blood electrolytes (Na^+ and K^+) detection for ICU settings.* Electrofinder™ uses a *liquid-based assay technique* based on turbidometry and nephelometry to detect K^+ and Na^+ respectively. Fluofinder™ uses *pH-based*

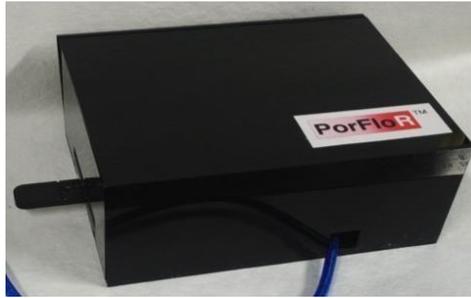
Na⁺ and K⁺ sensor films with CdTe QDs to detect the change in the fluorescence with different concentrations of Na⁺ and K⁺ levels in the whole blood, serum, or plasma sample. This technology has been **transferred to industry and currently under commercialization.**



Products under clinical validation

PorFloR™: Designed, developed and validated affordable *portable fluorescence reader and strips for detection of orthopedic implant-associated infection biomarkers such as C-reactive protein (CRP) and interleukin-6 (IL-6)*. It records the intensity of QDs fluorescence and change in fluorescence intensity of the spot on the solid 2D base (e.g. paper strips) material. **Currently, PorFloR™ is under clinical validation.**

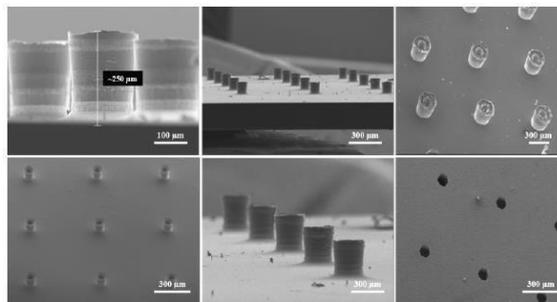


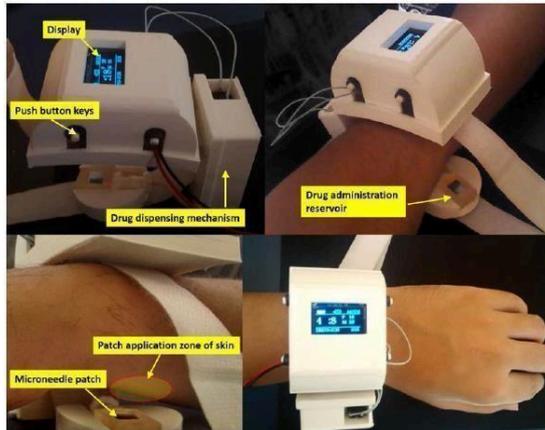


- Cholcheck™:** Designed and fabricated affordable *POC assays and a portable optical reader for HDL, LDL, Total Cholesterol & Triglycerides*. The developed technique uses paper-based and liquid-based enzymatic reactions to detect above mentioned parameters. The cost of the developed test is 50 INR each. **The Cholcheck™ is currently under clinical validation at KEM hospital, Parel, Mumbai.**



- Insulin Infusion Pump:** *The Insulin infusion Pump, along with hollow silicon microneedle patch and the flexible reservoir, is designed and developed.* The developed POCT can be programmed to deliver prescribed insulin dose at a scheduled time automatically. The insulin infusion pump can deliver the required basal-bolus insulin with high precision and minimal invasively. The dimensions of the fabricated silicon microneedle were 250 μm in length, 150 μm base diameter and 30 μm tip diameter. **The fabricated silicon microneedle and insulin pump were successfully tested in the clinical conditions.**





Products under development

Designed and developed cost-effective, commercially viable, lateral flow immunoassay-based point-of-care device for detection of *TSH, T3, T4, Troponin I & T*. The lateral flow assays have been developed along with the prototype of the lateral flow reader. **The assays and reader are currently being tested and compared in the lab with gold standards.**



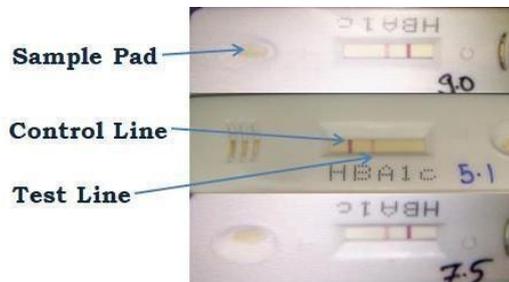
- Designed and developed affordable, rapid and portable point-of-care lateral flow immunoassays for detection of *Vitamin B12 and Vitamin D3*. The lateral flow assays have been developed using highly specific antigen-antibody interactions along with the prototype to measure of Vitamin B12 and Vitamin D3 level in the blood. The assays and reader are currently being tested and compared in the lab with commercial devices.



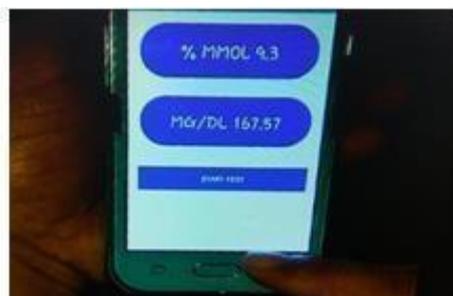
- Developed the liquid reagent-based assay for quantifying urinary iodine using Sandell-Kolthoff reaction along with *urinary myo-inositol and creatinine for gestational diabetes*. A Point-of-care *absorbance- based optical device is also developed* for quantification of the iodine, myo-inositol and creatinine in urine sample. The assays and reader are currently being tested and compared in the lab with gold standards.



- Developed a *smartphone-based reader and android image processing application to measure Glycated Hemoglobin or Hemoglobin A1c (HbA1c) in blood*. We have also developed sandwich lateral flow assay for the same. The color intensity of the test line is directly proportion to the HbA1c level in the blood.



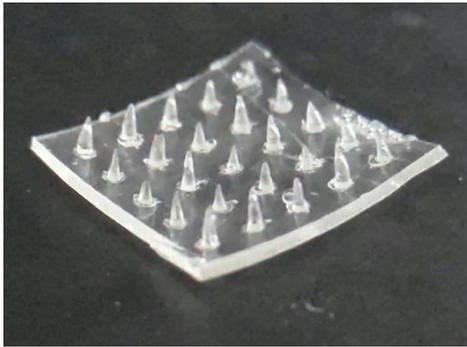
Lateral Flow assay for HbA_{1c}



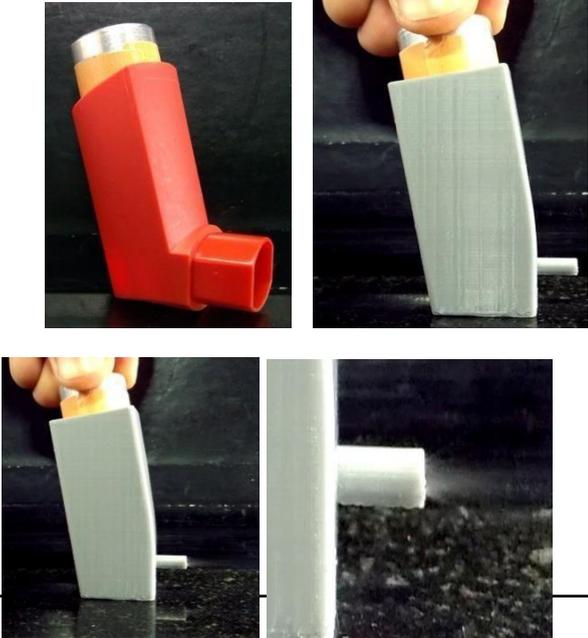
- Designed a POC device for detection of antibacterial resistance using forward laser scattering
- Designed POC device for haemoglobin, WBC, RBC, leucocytes and granulocytes analysis form 75 µL blood.

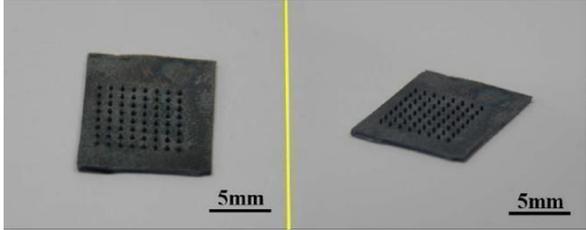
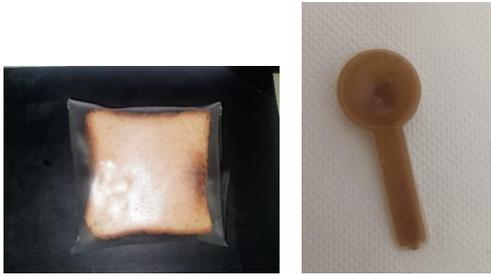
		<ul style="list-style-type: none"> ● Developed commercially viable device for subcutaneous glucose sensor for continuous monitoring. ● Developed Turn-on' fluorescence assay for inorganic phosphate sensing. ● Synthesized N-doped multi-fluorescent carbon dots for 'turn off-on' silver-biothiol dual sensing and mammalian cell imaging application.
2.	<p>Affordable Clinically Relevant Cancer Diagnostics and Therapeutics</p>	<ul style="list-style-type: none"> ● Preclinically investigated novel engineered biodegradable liposome-gold (LiposAu) nanotheranostic probe for breast cancer ablation. ● <i>This formulation is currently in the initial assessment of clinical studies for breast/oral cancer diagnosis and treatment.</i> ● Developed cost effective plasmonic nanoshell (Toco- Photoxil™) for image guided EPR directed tumor ● Fabricated affordable photothermal agents based on the over coating of gold nanoparticles on the surface of PCL and PNVCL polymeric cores. These nanoshells have been tested for <i>in vivo</i> studies exhibiting significant tumor volume reduction. ● Developed multifunctional NIR dye encapsulated self-assemblies viz. polymeric and lipid nanoparticles for cancer theranostic applications. ● Engineered QDs decorated liposomal nanomedicine for site selective tumor diagnosis and regression. ● Developed doxorubicin encapsulated bioinspired nanohybrids (NanoBioxil™) for targeted combined chemo-photothermal therapy. ● Conceptualized and developed NANOTORRID®: Graphene-like Properties of a Gold/Polypropylene Nanocomposite and its Photothermal Application ● Conceptualized and developed Molecularly Engineered Anticancer Drug Conjugated organic nanomicelles for Site-selective cancer cell rupture and growth inhibition of ''Tumor spheroids. ● Conceptualized and developed various strategies for NIR light mediated safe photothermal therapy of cancer. ● Developed pH-and thermosensitive thin lipid layer

		<p>coated mesoporous magnetic nano-assemblies as a dual drug delivery system towards thermo-chemotherapy of cancer.</p> <ul style="list-style-type: none"> ● Engineered emissive carbonic nanostructures viz. graphene QDs, carbon QDs, graphene nanoflakes for localized imaging, biosensing and light triggered phototherapy. These formulations have been validated for multiphases of cancer cell imaging, selective thermolysis of cancer cells and solid tumor regression under the NIR exposure. ● Designed and synthesized gold nanorods encapsulated liposomes for combined chemo-photothermal therapy. ● Green process for synthesizing metal Nanoparticles within polymeric matrices ● A nanocomposite of fluorescent gold nanocluster conjugated crumpled mxene nanosheets and application.
3.	Drug Delivery Technologies	<ul style="list-style-type: none"> ● Designed all in one single-nanoscale platform for microtubule docetaxel and tyrosine kinase sorafenib deliverables and high-sensitivity quantum dots imaging for hepatoma treatment. ● Developed a chimeric cetuximab-functionalized corona as a potent delivery system for microtubule-destabilizing nanocomplexes to hepatocellular carcinoma cells. ● Prepared a carboxymethyl chitosan-coated poly(lactide-co-glycolide) (cmcPLGA) core-shell nanostructure via a simple one-step nanoprecipitation self-assembly process for dual drug delivery application. ● Fabricated novel drug conjugated polymeric nano-assemblies for targeted drug delivery. ● Designed and developed novel biodegradable solid polymeric microneedle patch for transdermal drug delivery applications.

		
4.	Affordable Innovative Solutions in Orthopedics	<ul style="list-style-type: none"> ChiSep™: Conceptualized, designed and developed novel affordable <i>cefuroxime conjugated chitosan (CEF-con-CH) hydrogel for treatment of surgical and chronic wound infections</i>. The CEF-con-CH hydrogel exhibited excellent hemocompatibility and cytocompatibility. It showed good antibacterial activity upon sustained release of cefuroxime by ester hydrolysis. ChiSpon™: Designed and fabricated <i>chitosan sponges as a sustained release carrier system for the prophylaxis of orthopedic implant-associated infections</i>. The cost-effect chitosan sponges containing ciprofloxacin and cefuroxime were prepared by freeze-drying process. The preclinical evaluation proved excellent biocompatibility, safety and efficacy of CH- CIP and CH-CEF sponges. <div data-bbox="858 1205 1214 1563" data-label="Image">  <p style="text-align: center;">Antibiotic loaded Polymer sponges</p> </div> <ul style="list-style-type: none"> CombiSpon™: Designed and developed a “TRIPLE ACTION” concoction formulation through a layered chitosan implant, which is simple, non-invasive and provide sustained release of drugs to avoid frequent painful injections in the treatment of postsurgical complications in joint replacement surgery. The proposed system composed of NSAIDs, analgesic, steroid and antibiotic loaded individual sponges compressed into a single layered chitosan implant that could be applied at the site of surgery as a single formulation to tackle pain, infection, inflammation and uncontrolled bleeding at a time for the longer

		<p>period.</p> <ul style="list-style-type: none"> • Currently this technology under preclinical evaluation.  <ul style="list-style-type: none"> • BioScrew™: Designed and developed an <i>affordable novel biodegradable bone screw for bone- soft tissue fixation applications</i>. The optimized MgO-Silk-PCL novel composite was used to prepare biodegradable bone screw. This biodegradable screw exhibited good mechanical strength, excellent biocompatibility, hemocompatibility and degradability. Currently, it is manufactured under GMP condition in order to take this biomaterial into clinics. 
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<p>5. Cost- effective TB Diagnostics and Therapeutic s</p>		<ul style="list-style-type: none"> • Developed and characterized the metered dose inhaler (mdi) formulations for drug sensitive and MDR tuberculosis. 
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		<ul style="list-style-type: none"> Developed and validated the rapid, low cost and affordable TB diagnostics.  <ul style="list-style-type: none"> “TB Nanodots”: Designed and fabricated MEMS based hollow silicon microneedle patch for TB drug delivery. 
6.	Miscellaneous	<ul style="list-style-type: none"> We are also doing a collaborative project with Cipla Limited to check the interaction between a respiratory drug developed by Cipla, and lactose using Bio-AFM. Designing and developing Luke warm water soluble biodegradable plastic made of agricultural waste. The proposed technology will help India to reduce its plastic waste problem. ZnO Nanoleaves for antibacterial and anti- counterfeiting applications. 

NEW STARTUP'S			
COMPANY NAME	Co-FOUNDERS	AIM	DEVICE

AUDOSENS (registered as ShodhSens Diagnostics Private Limited)	Prof Rohit Srivastava, Dr Vinay Patel and Santosh Bodakhe	A handheld device for multiple diagnostic tests – Lipid profile and Glycated Albumin	
CLINICOSIS	Prof Rohit Srivastava and Pratik Mishra	<ul style="list-style-type: none"> • IV Fluid Alarm System • Remote Fluid Monitoring using AI • Navrakshak Products including PPE, Ultra PPE, Masks, Maternity Kit etc 	
Effecmed Pvt Ltd	Prof Rohit Srivastava, Prof Jayesh bellare and Dr Kunal Khanna	Bone Screws and Tissue Engineered Scaffolds	
MED INNO TEC	Prof Rohit Srivastava and Dr Vaishali	Chitosan sponges for prevention and treatment of orthopaedic implant associated infection Microneedle based pain management	
LIFESEED	Prof Rohit Srivastava, Dr. Priyanka Maske, Dr. Vaishali Pawar	An active gel formulation for the management of male idiopathic fertility	

NEW STARTUP'S in 2024-25			
COMPANY NAME	Co-FOUNDERS	AIM	DEVICE
HemoFlo Devices Pvt Ltd	Prof Rohit Srivastava, Dr Rupesh Ghyar, Santosh Bodakhe and others	To work on Point of Care Diagnostics for Cardiac Monitoring including Trop I/T and Lipid Analyzer	

Polytrack Devices Pvt Ltd	Prof Rohit Srivastava, Dr Rupesh Ghyar, Santosh Bodakhe and others		
Drepto Biodevices Pvt Ltd	Prof Rohit Srivastava, Rahul Kumar Gupta and others		
NanoTherapX Pvt Ltd	Prof Rohit Srivastava, Prof Shamik Sen, Roshan Keshari		
InnomedTech Pvt Ltd	Prof Rohit Srivastava and Pratik Mishra		
FeRRY Pvt Ltd	Prof Rohit Srivastava, Rohit Sagvekar, Dr Surya Vardhan, Aniruddh Anilkumar		

Details of the Technology/ Products/ Knowledge Base Commercialized

Details of Technology Commercialized; Uchek – Mobile Based Urine Analysis System

Technology Readiness Level (TRL) * TRL 9

Significance to Science, Technology and Society (Maximum 100 Words are allowed) *

UChek is a smartphone-based portable diagnostic system that measures *bilirubin, ketone, specific gravity, leukocytes etc. it can measure total (10+2) parameters* of routine urine analysis. Uchek takes images at predetermined time intervals to detect color changes in urine strip parameter pad and give highly accurate results. UChек has been transferred, commercialized and sold in the Indian market.

Name, Address and Contact details

Biosense Technologies Private Limited

Unit A9, Bhumi World Industrial Park, Pimplas Road, Mumbai Nasik Highway, Kalyan Bhiwandi Rd, Bhiwandi, Maharashtra 421302

Date of Commercialization

Jan 2013

Socio Economic Impact:

This product has led to a reduction in dependence on high-cost products being sold by Multinationals in India. The price to the customer in smaller path labs, Tier 2 and Tier 3 cities have gone down by 1/3rd the prevailing prices. Doing Business of more than 50 Cr INR every year.

Industries Benefited with contact details: Smaller pathlabs, Mobile healthcare vans, smaller clinics and hospitals in Tier 2 and Tier 3 cities.

Details of Technology Commercialized: CholChek

Technology Readiness Level (TRL) * TRL 6/7

Significance to Science, Technology and Society

A handheld device which is used to detect all major parameters of the lipid profile like HDL, LDL, TC and TG. Two drops of peripheral blood can be loaded onto the strip and gives results within a minute.

Name, Address and Contact details

Licensed to my startup AUDOSens (registered as ShodhSens Diagnostics Private Limited)
SINE, 5th Floor, Rahul Bajaj Innovation Center, IIT-Bombay, Powai, Mumbai- 400076

Details of Technology Commercialized: SYNC Indigenous Glucometer and Strips

Technology Readiness Level (TRL) *

TRL 9

Significance to Science, Technology and Society

A Smart & All-in- one compact sized Glucometer for personal use. It is designed, developed and manufactured in India with most affordable glucose test strips available with it. Tracking sugar levels is made easier and smarter with the Bluetooth technology. You can pair the SYNC glucometer with Bluetooth and track all your test records in a simple graphical format. SYNC is an easy way to manage patients' blood glucose. SYNC has been transferred, commercialized, and sold in the Indian market.

Name, Address and Contact details

Biosense Technologies Private Limited
Unit A9, Bhumi World Industrial Park, Pimplas Road, Mumbai Nasik Highway, Kalyan - Bhiwandi Rd,
Bhiwandi, Maharashtra 421302
<https://www.biosense.in/index.php>

Date of Commercialization *

Jan 2013

Socio Economic Impact

The glucometer and strips were introduced in the Indian market at less than 1/5th the prevailing prices of competitive products and have benefited the general population of India significantly.

Industries Benefitted with contact details

Home consumers and diabetic patients across India

Details of Technology Commercialized: TouchHb - non-invasive anemia screening system

Technology Readiness Level (TRL) TRL 9

Significance to Science, Technology and Society

A non-invasive anemia screening system, to be used for semi-quantitative determination of hemoglobin, supplementing the clinical evidence in the *screening & monitoring of anemia at the point of care. The system uses the method of reflectance photometry and is suitable for use in hospitals, doctor's offices, and nursing homes.* This

technology has been transferred, commercialized and sold in the Indian market.

Name, Address and Contact details

Biosense Technologies Private Limited

Unit A9, Bhumi World Industrial Park, Pimpas Road, Mumbai Nasik Highway, Kalyan - Bhiwandi Rd, Bhiwandi, Maharashtra 421302

<https://www.biosense.in/index.php>

Date of Commercialisation *

2015

Details of Technology Commercialized: CareMother- BabyBeat Fetal Monitor

Technology Readiness Level (TRL) TRL 9

Significance to Science, Technology and Society

BabyBeat comes with a supporting app that helps to find and track your baby's heartbeat. With BabyBeat, expecting moms can easily perform NST (Fetal Heart Rate Test) at home and share the reports with their doctors if required. Pregnancy can be full of uncertainties and as expecting parents you always worry about the well being of your baby. BabyBeat brings to you the much-needed peace of mind.

Name, Address and Contact details

Doto Health Pvt Ltd,

701, Deron Heights Varsha Park Apartment, Above Ranka jewelers, Opposite Mahabaleshwar Restaurant, Baner Road, Baner, Pune Pin. 411045 Maharashtra, India

Date of Commercialization:

Jan 2021

Details of Technology Commercialized: CareMother- Anandimaa

Technology Readiness Level (TRL) TRL 9

Significance to Science, Technology and Society*

AnandiMaa is a complete solution for pregnancy care that has been designed with the specific purpose of providing quality antenatal and postnatal services to pregnant and lactating women in underserved and marginalized regions of India.

It is a compact & portable pregnancy care kit that contains:

1. An antenatal care kit: BP meter, thermometer, urine strips, Hb meter, Glucometer, stethoscope, fetal doppler and measuring tape.
2. Mobile Application: Monitoring, reporting & decision support for high-risk pregnancy follow-ups
3. Web portal: A one click management and analysis platform with MIS

Name, Address and Contact details *

Doto Health Pvt Ltd

701, Deron Heights Varsha Park Apartment, Above Ranka jewelers, Opposite Mahabaleshwar Restaurant, Baner Road, Baner, Pune Pin. 411045 Maharashtra, India

Date of Commercialization *

2019

Details of Technology Commercialized: CareMother- Fetomax

Technology Readiness Level (TRL) TRL 9

Significance to Science, Technology and Society*

A wireless, interactive and smart-phone based NST/CTG machine designed to monitor pregnancy remotely from anywhere, at anytime for the doctors and mothers that provides the best fetal monitoring experience possible.

Fetomax kit main components:

1. Speaker
2. Tablet
3. Toco probe
4. Doppler or FHR Probe
5. Movement marker
6. Aluminum case

Name, Address and Contact details*

Doto Health Pvt Ltd

701, Deron Heights Varsha Park Apartment, Above Ranka jewelers, Opposite Mahabaleshwar Restaurant, Baner Road, Baner, Pune Pin. 411045 Maharashtra, India

Date of Commercialization *

2021

Details of Technology Commercialized * EffecMed- BioScrew

Technology Readiness Level (TRL) *TRL 7

Significance to Science, Technology and Society*

An affordable novel biodegradable bone screw for bone soft tissue fixation applications. The optimized MgO-Silk-PCL novel composite was used to prepare biodegradable bone screw. This biodegradable screw exhibited good mechanical strength, excellent biocompatibility, hemocompatibility and degradability.

Name, Address and Contact details *

Effecmed Pvt Ltd

CM-06, 3rd Floor, CSRE Building, IIT Bombay Powai, Mumbai - 400076

Date of Commercialisation *

Not yet

Major Facility / Infrastructure Developed

Names of the Facility / Infrastructure Developed *

Medical Engineering Design & Innovation Centre (MEDIC) funded by DBT

Impact of the Facility / Infrastructure Developed *

The MEDIC, a dedicated 1000 square feet area meticulously designed for the development of proof-of-concept medical devices. This space is equipped with state-of-the-art facilities, including cutting-edge technology and specialized equipment tailored to support the innovative process of creating and refining medical prototypes. Additionally, within the center, there are segmented areas strategically allocated for various purposes, such as the conference room, humidity control room, lab, and working area. Each segmented area is optimized to fulfill its specific function, ensuring efficiency and productivity throughout the facility.

Whether it's brainstorming sessions in collaborative spaces or hands-on experimentation in the development area, MEDIC provides a conducive environment for advancement and breakthroughs in medical device technology.

Details of Stakeholders / Users *

MEDIC fellows (10 fellows per year) with SINE, IIT Bombay and DSSE, IIT Bombay combining technology development, technology transfer and entrepreneurship development

Refereed Publications (Total citations: 10475, h-index– 51, i10-index- 226, as per Google Scholar last retrieved on 12th May 2025)

2025

1. Singh, Chandrabhan, Prem Shanker Yadav, Himanshu Kumar Shukla, Rohit Srivastava, and Upendra Kumar. "Analysis of Integrated Intelligent Methods Toward Medical Decision-Making." *Smart Electronic Devices and Systems for Biomedical and Healthcare Applications* (2025): 253.
2. Keshari, Roshan, Rupali Bagale, Sulagna Rath, Swapnil Raut, Lokesh Kumar Bhatt, Abhijit De, Shamik Sen, and Rohit Srivastava. "Soya lecithin–PLGA based hybrid nanocomposite enhances resveratrol delivery for psoriasis treatment and management." *Industrial Crops and Products* 236 (2025): 121575.
3. Bahadur, Rohan, Swapnil Deshpande, Barkha Singh, Nithya S. George, P. A. Aleena, Wei Li, Dong-Chen Qi, Rohit Srivastava, Sudip Chakraborty, and Ajayan Vinu. "Ordered Mesoporous Borocarbonitride-Reduced Graphene Oxide Heterostructure for Quasi Solid-State Supercapacitors and Sodium-Ion Batteries." *Nano Energy* (2025): 111495.
4. Parmar, Darshitsinh, Prashant Kumar, Rohit Srivastava, and Prahlad K. Baruah. "Determination of heavy metal pollutants in water samples using laser induced breakdown spectroscopy." *Journal of Laser Applications* 37, no. 3 (2025).
5. Thakkar, Chinmay, Valmik P. Jejurkar, Mansi Singh, Monalisha Debnath, Anjali Tripathi, Purav Badani, Rohit Srivastava, and Satyajit Saha. "Triarylmethane (TRAM)-Based Aggregation-Induced Emissive Luminogen with Enhanced Oxidation Stability and Bio-Imaging Capability." *Asian Journal of Organic Chemistry* (2025): e00217.
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8. Debnath, S. K.; Singh, B.; Agrawal, N.; **Srivastava, R.**; EPR-selective biodegradable polymer-based nanoparticles for modulating ROS in the management of cervical cancer, Handbook of Oxidative Stress and Cancer, Springer-Nature (**Invited book chapter**)

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Patents:

Total 80+ patents granted (3 US + 80+ Indian) and several other Patents, IDFs, Trademarks and Designs have been filed and published online

US Patents- GRANTED/ APPLIED

No.	Title of the IDF	Name of the Inventors	IPA No.
P1	Glucose biosensor system coupled with an anti-inflammatory module and methods for using the same	Rohit Srivastava , Rahul Dev Jayant and Ayesha Chaudhary	Granted US Patent No US 8916136 B2 on 23 rd Dec 2014
P2	Biosensor for health monitoring and uses thereof	Ayesha Chaudhary and Rohit Srivastava	Pub.No.:US2012/0016217A1 Pub. date: 19-01-2012
P3	Compositions and methods for nano-in-micro particles	Abhijeet Joshi & Rohit Srivastava	Pub.No.:US2011/0229580A1 Pub. date: 22-09-2011
P4	Targeted polymeric nano complexes as drug delivery system	Radhika Poojari, Dulal Panda, Rohit Srivastava	Pub.No.:US2017/0128592A1 Pub. date: 11-05-2017
P5	Nano-engineered bioresorbable polymer composite for bone-soft tissue fixation applications	Ajay Suryavanshi, Jayesh Bellare, Kunal Khanna and Rohit Srivastava	Pub.No.: US20200046882A1 Pub. date: 13-02-2020

P6	Rapid and scalable bioresponsive plasmonic gated functional nanohybrid and their use of	Rajendra Prasad, Deepak Singh Chauhan, Devrukhar, Barkha Singh, Amit Yadav, Gopal Kundu, Mahadeo Gorain and Rohit Srivastava	<i>Filing for US Patent through NCCS Pune</i>
P7	One-step scalable design of biocompatible gold nanorods for nanomedicine	Rajendra Prasad, Deepak Singh Chauhan, Devrukhar, Barkha Singh, Amit Yadav, Gopal Kundu, Mahadeo Gorain and Rohit Srivastava	<i>Filing for US Patent through NCCS Pune</i>

Indian Patents-GRANTED/Applied

No.	Title of the IDF/Patents	IPA No.	Year
P8	A Point-of-care test for lithium	PAT/BS/23N0093-1/25-26	2025
P9	3D scaffold-based organic composite hydrogel for bioink	PAT/BS/20003985-1/25-26	2025
P10	Cell-laden scaffold for bioprinting and biofabrication of 3D hydrogels	PAT/BS/20003985-2/25-26	2025
P11	Smart Gel for Gums: Local Delivery of Ciprofloxacin and Tinidazole	PAT/BS/20004026-1/25-26	2025
P12	Modular Video recording system for operation theatre	KH/MT/30004092-1/25-26	2025
P13	Portable Suctioning Device for Meconium Extraction	KH/MT/30004092-2/25-26	2025
P14	Handheld β -hCG detection device and novel diagnostic method for ectopic pregnancy	DES/BS/30006464-1/25-26	2025
P15	Parkisense	CP/BS/RS-1/25-26	2025
P16	Polymer-Coated Magnetic Nanoparticles (CoFe ₂ O ₄) for Targeted Delivery of Intra-Articular Gel for Pain Management	PAT/BS/174303017-1/25-26	2025
P17	Non-Flammable, Hydrophobic Film-Forming Spray for Wound Protection	PAT/BS/23N0093-1/25-26	2025
P18	Minimally Invasive Treatment of Uterine Fibroids Using letrozole Based Nanoliposomes vaginal Hydrogel	PAT/BS/23M0125-1/24-25	2025
P19	Prospects of Dual-Drug Inhalation Therapy Using Lipid Nanoparticles Co-Loaded with Erythromycin	PAT/BS/174303017-2/24-25	2025

	and Carbocisteine for Bacterial Lung Infections		
P20	Inhalation Therapy for COPD Using Dual-Drug Lipid Nanoparticles Co-Delivering Carbocisteine and formoterol fumarate dihydrate (FFD)	PAT/BS/174303017-1/24-25	2025
P21	Multifunctional Transdermal Drug delivery using Microneedle array patches	PAT/BS/193300023-1/24-25	2025
P22	Microneedle Patch: A Novel and Patient-Friendly Approach for Long-Lasting Relief from Motion Sickness and Nausea	PAT/BS/30003829-1/24-25	2024
P23	Microneedle array patch based transdermal drug delivery system	PAT/BS/30003829-2/24-25	2024
P24	Universal adapter for Peritoneal Dialysis	DES/BS/204308001-1/24-25	2024
P25	Multifunctional Nanofiber formulation as Novel Delivery System and its application	PAT/AC/174360004-1/24-25	2024
P26	Multifunctional Nanofibrous formulation as Novel Delivery System and its application	PAT/AC/174360004-2/24-25	2024
P27	Transdermal Patches: Localized Drug Delivery System for Corns and Calluses Treatment	PAT/BS/30003829-3/24-25	2024
P28	Flexible microneedle mediated nanotheranostic implant and its application	PAT/AC/174360004-3/24-25	2024
P29	3D Printed Nanoparticle-Loaded Scaffolds for Wound Healing and Real-Time Drug Release Monitoring	PAT/AC/174360004-4/24-25	2024
P30	Dual drug membrane based nanocarrier and its application	PAT/AC/174360004-5/24-25	2024
P31	A TEMPERATURE CONTROLLED CHILLING BOX WITH LIQUID NITROGEN COOLING SYSTEM FOR BIOLOGICAL SAMPLE TRANSPORT	PAT/BS/204308001-1/24-25	2024
P32	Medical Product Transport: Lightweight Chilling Box Integrated with Drone Technology	PAT/BS/204308001-2/24-25	2024
P33	Intravenous fluid and urine monitoring system alarm system using artificial intelligence and machine learning	PAT/BS/204308001-3/24-25	2024
P34	Mask mounted nebulizer operable through mobile phone power	PAT/BS/204308001-4/24-25	2024
P35	Synthesis of novel upconversion nanoparticles and	PAT/AC/174360004-6/24-25	2024

	their applications	5	
P36	Anti-acne hydrogel based microneedle patches	PAT/BS/30003829-4/24-25	2024
P37	Comparative evaluation of systemically and locally administered cancer targeting dual peptide-drug delivery system incorporated photothermal agent	PAT/AC/174360004-7/24-25 5	2024
P38	Iontophoresis based patched for drug delivery	PAT/BS/30003829-5/24-25	2024
P39	Design and development of RGB controllable lighting-based colorimeter for measurements in liquid samples	PAT/BS/184300001-1/24-25 5	2024
P40	Design and development of RGB controllable lighting-based colorimeter for measurements in liquid samples	PAT/BS/184300001-2/24-25 5	2024
P41	Triple photothermal therapy responsive multimodal nanoformulation with applications: Preparation method and studies thereof	PAT/AC/174360004-8/24-25 5	2024
P42	Nanohydrogel with slow release of fertilizers and nutrients for sustainable agriculture	PAT/AC/174360004-9/24-25 5	2024
P43	Smart Mattress for preventive care of Pressure Ulcers	PAT/BS/22M0124-1/24-25	2024
P44	Intelligent Automated Intubation Device for Airway Management	PAT/BS/30005488-1/24-25	2024
P45	Intelligent Automated Intubation Device for Airway Management	PAT/BS/30005488-3/24-25	2024
P46	Design and development of RGB controllable lighting-based colorimeter for measurements in liquid samples	PAT/BS/184300001-3/24-25 5	2024
P47	An assistive aid to improve oral hygiene in patients with cerebral palsy	PAT/BS/30005427-1/24-25	2024
P48	Point-of-care multiplex microfluidic analyzer for Iron, Hemoglobin and Ferritin	PAT/BS/30005404-1/24-25	2024
P49	A novel technique of raw poultry meat processing to enhance its flavour and decrease the overall carcinogens formed	PAT/BS/30004910-1/24-25	2024
P50	Novel electrical-vibrational stimulation device for Pelvic Floor Muscle rehabilitation	PAT/BS/30005281-3/24-25	2024
P51	A Novel Liquid Bandage Formulation using Esmolol Hydrochloride for Diabetic Foot Ulcers (DFU).	PAT//30005281-1/24-25	2024
P52	A mobile application to digitise logbook entries, share medical literature resources, and build a community for medical professionals.	CP/BS/30005391-2/24-25	2024
P53	A mobile application to digitise logbook entries, share medical literature resources, and build a community for medical professionals.	CP/BS/30005391-3/24-25	2024
P54	A mobile application to digitise logbook entries, share medical literature resources, and build a community for medical professionals.	CP/BS/30005391-4/24-25	2024
P55	AssayChek \hat{A} , \hat{A} : Estimation of multiple metabolites in clinical and biological samples using a portable electronic device for point-of-care diagnostic testing.	PAT/ME/30004738-1/24-25	2024

P56	Pacifier based Saliva Sample Collection Device with Self-Aspiration Conduit	PAT/BS/30005391-1/24-25	2024
P57	Catridge for dialysate purificaton	PAT/ME/30004738-2/24-25	2024
P58	Novel Liquid Bandage Formulation for Diabetic Foot Ulcers (DFU)	PAT/BS/30004910-2/24-25	2024
P59	Cartridge for dialysate purification	DES/ME/30004738-1/24-25	2024
P60	Multiplexed microfluidic-LFA integrated cartridge and cartridge reader device for anemia diagnosis	PAT/BS/30004910-3/24-25	2024
P61	On-Chip Silver/Silver Chloride Reference Electrode for Miniaturized Electrochemical Systems	PAT/BS/30005411-2/24-25	2024
P62	ChaiCETAMOL (Paracetamol based lemon tea)	TM/BS/30004910-1/24-25	2024
P63	Infection-Responsive Theranostic Device for the Prevention and Monitoring of Infection at the Surgical and Wound Site	PAT/BS/22M0136-1/24-25	2024
P64	Multi-source portable Fluorimeter with programmable intensity control	PAT/BS/184300001-4/24-25	2024
P65	SuiCURE	TM/AC/174360004-1/24-25	2024
P66	NanoBioPrint	TM/AC/174360004-2/24-25	2024
P67	Novel electrical-vibrational stimulation device for Pelvic Floor Muscle rehabilitation	PAT/BS/30005281-3/24-25	2024-25
P68	Progesteron glucoronide Lateral flow test kit	PAT/BS/30005281-2/24-25	2024-25
P69	A novel technique of raw poultry meat processing to enhance its flavour and decrease the overall carcinogens formed	PAT/BS/30004910-1/24-25	2024-25
P70	Point-of-care multiplex microfluidic analyzer for Iron, comobin and Ferritin	PAT/BS/30005404-1/24-25	2024-25
P71	An assistive aid to improve oral hygiene in patients with cerebral palsy	PAT/BS/30005427-1/24-25	2024-25
P72	Design and development of RGB controllable lighting-based colorimeter for measurements in liquid samples	PAT/BS/184300001-3/24-25	2024-25
P73	Intelligent Automated Intubation Device for Airway Management	PAT/BS/30005488-3/24-25	2024-25
P74	Smart Mattress for preventive care of Pressure Ulcers	PAT/BS/22M0124-1/24-25	2024-25
P75	Nanohydrogel with slow release of fertilizers and nutrients for sustainable agriculture	PAT/AC/174360004-9/24-25	2024-25
P76	Triple photothermal therapy responsive multimodal nanoformulation with applications: Preparation	PAT/AC/174360004-8/24-25	2024-25

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P77	Iontophoresis based patched for drug delivery	PAT/BS/30003829-5/24-25	2024-25
P78	Comparative evaluation of systemically and locally administered cancer targeting dual peptide-drug delivery system incorporated photothermal agent	PAT/AC/174360004-7/24-25	2024-25
P79	Anti-acne hydrogel-based microneedle patches	PAT/BS/30003829-4/24-25	2024-25
P80	Synthesis of novel upconversion nanoparticles and their applications	PAT/AC/174360004-6/24-25	2024-25
P81	Mask mounted nebulizer operable through mobile phone power	PAT/BS/204308001-4/24-25	2024-25
P82	Intravenous fluid and urine monitoring system alarm system using artificial intelligence and machine learning	PAT/BS/204308001-3/24-25	2024-25
P83	Medical product transport: lightweight chilling box integrated with drone technology	PAT/BS/204308001-2/24-25	2024-25
P84	A temperature controlled chilling box with liquid nitrogen cooling system for biological sample transport	PAT/BS/204308001-1/24-25	2024-25
P85	Dual drug membrane based nanocarrier and its application	PAT/AC/174360004-5/24-25	2024-25
P86	3D Printed Nanoparticle-Loaded Scaffolds for Wound Healing and Real-Time Drug Release Monitoring	PAT/AC/174360004-4/24-25	2024-25
P87	Flexible microneedle mediated nanotheranostic implant and its application	PAT/AC/174360004-3/24-25	2024-25
P88	Transdermal Patches: Localized Drug Delivery System for Corns and Calluses Treatment	PAT/BS/30003829-3/24-25	2024-25
P89	Multifunctional Nanofibrous formulation as Novel Delivery System and its application	PAT/AC/174360004-2/24-25	2024-25
P90	Microneedle array patch based transdermal drug delivery system	PAT/BS/30003829-2/24-25	2024-25
P91	Microneedle Patch: A Novel and Patient-Friendly	PAT/BS/30003829-1/24-25	2024-25

	Approach for Long-Lasting Relief from Motion Sickness and Nausea		
P92	Universal adapter for Peritoneal Dialysis	PAT/BS/204308001-4/23-2 4	2023-20 24
P93	Fibre Optic Bronchoscopy (FOB) Trainer	PAT/BS/204308001-3/23-2 4	2023-20 24
P94	Herbal composite gel formulation for treatment of psoriasis	PAT/BS/30003829-2/23-24	2023-20 24
P95	A facile and scalable method to fabricate an on-chip solid-state reference electrode	PAT/BS/20002873-1/23-24	2023-20 24
P96	Exploring the therapeutic potential of PI3K/Akt/mTOR inhibitor loaded lipid-Polymeric conjugated hybrid nanoparticles derived hydrogel in psoriatic skin lesions: Insights from Imiquimod-induced psoriatic mice model	PAT/BS/194301001-1/23-2 4	2023-20 24
P97	Novel biomaterial for enhancing wound healing and tissue regeneration: Preparation method and studies thereof	PAT/AC/174360004-4/23-2 4	2023-20 24
P98	Design registration for the invention: a retractable needle safety cap assembly.	DES/BS/204308001-2/23-2 4	2023-20 24
P99	An improved gravimetric based alarm system for fluid regulation.	PAT/BS/204308001-2/23-2 4	2023-20 24
P100	Novel Iron-fortified Beverage with Enhanced absorption through Fructooligosaccharide complexation, targeting anemia and iron deficiency.	PAT/BS/30005281-1/23-24	2023-20 24
P101	Injectable Electrospun Nanostructure Theranostics for Targeted Photochemotherapy	PAT/AC/174360004-3/23-2 4	2023-20 24
P102	Synthesis, characterization, and screening of novel cancer-targeting peptide ligands	PAT/AC/174360004-2/23-2 4	2023-20 24
P103	Development and Characterization of Aerosol formulations for Drug Sensitive and Drug Resistant Tuberculosis.	PAT/BS/P14400-1/23-24	2023-20 24
P104	Ferric pyrophosphate increases iron absorption for oral iron supplementation for iron anemia deficiency	PAT/BS/22D0062-1/23-24	2023-20 24

P105	Horseradish peroxidase and carbocysteine encapsulated liposomal formulation for lung cancer deposited anthracene degradation.	PAT/BS/204300009-2/23-24	2023-2024
P106	Shellac coating on Hydroxy-Polyvinyl alcohol (PVA-OH) films for improving hydrophilicity.	PAT/ME/30004910-3/23-24	2023-2024
P107	Bacopa monnieri Phytosomes in ice cream: A novel delivery system for the adaptogenic herb	PAT/ME/30004910-2/23-24	2023-2024
P108	Temperature responsive patch	PAT/BS/30003829-1/23-24	2023-2024
P109	Dzyinr Company Logo and Trademark registration	TM/BS/204308001-2/23-24	2023-2024
P110	Remote Intelligent Observation System (RIOS)	PAT/BS/204308001-1/23-24	2023-2024
P111	AUDOSens	TM/BS/20002873-1/23-24	2023-2024
P112	Red emissive liposomal nanopitchers as theranostics and a process for preparing the same	PAT/486170/20/12/23	2023
P113	Ppc nanotorrid for photothermal therapy in cancer	PAT/484272/18/12/23	2023
P114	Mxene composite nanosheet and method of preparing the same	PAT/484042/18/12/23	2023
P115	Additional tube insert arrangement for respiratory mask	PAT/460692/19/10/23	2023
P116	Organic 3D sponges preparation process and applications thereof	PAT/446704/23/8/23	2023
P117	A microwave assisted hydrothermal method for synthesis of fluorescent carbon nanospheres	PAT/ 441538/31/7/23	2023
P118	Degradable or transformable gold coated liposomal nano-construct and a process for its preparation	PAT/ 437191/04/07/23	2023
P119	Biocompatible gold nanoparticles and method of synthesis thereof	PAT/438420/12/07/23	2023
P120	Near infra-red light responsive gold decorated solid lipid nanoparticles and process for preparation thereof	PAT/ 435844/27/6/23	2023
P121	Nano enabled wound dressing composition and a	PAT/434280-9/6/23	2023

	method for its preparation		
P122	An ultrasound probe cover with a prefilled and peelable pouch containing coupling agent	PAT/434373-9/6/23	2023
P123	A point of care Lateral flow assay device for human specific semen detection	PAT/434171-8/6/23	2023
P124	Point of care detection of Haemoglobin	PAT/ 434170-8/6/23	2023
P125	A composite Drug delivery system and a method of preparation thereof	PAT-433347- 31/5/2023	2023
P126	ANTI-CANCER COMPOUND, 4,4'-(1,2-Ditellurdiyl) bis(2-aminobutanoic acid) AND METHOD FOR PREPARING THE SAME	202321011627	2023
P127	Point-of-care test for detection of troponin I and Troponin T	PAT/BS/184306002-1/22-2 3 on 10th January 2023	2023
P128	Synthesis, characterization and screening for anti-cancer activity of 1,3-Tellurazolidine-4-carboxylic acid	PAT/AC/174360004-1/22-2 3 on 19th January 2023	2023
P129	Synthesis, characterization and screening for anti-cancer activity of 4,4 TM -(1,2-Ditellurdiyl)bis(2-aminobutanoic acid)	PAT/AC/174360004-2/22-2 3 on 19th January 2023	2023
P130	Lipid polymer conjugated nanoparticulate derived hydrogel affectively ameliorate imiquimod induced psoriatic lesion in mice via restricting immune cells recruitment.	PAT/BS/194301001-2/22-2 3 on 19th January 2023	2023
P131	Orgospung	TM/AC/174360004-1/22-2 3 on 3rd January 2023	2023
P132	Design and Development of Uterine Activity assessment device (U-Act)	PAT/BS/20002873-4/22-23	2022-2023
P133	Synthesis of biocompatible Dodecyl Ethyl Dimethyl Ammonium Bromide (dmab) stabilized au-pt bimetallic Plasmonic nanorods	Granted Indian Patent No: 414280 on 12th December 2022	2022
P134	Novel synthesis of titanium carbide (Ti ₃ C ₂ -mxene) Nanobipyramids by hydrothermal method	Granted Indian Patent No: 410620 on 31st October 2022	2022
P135	Green process for synthesizing metal Nanoparticles	Granted Indian Patent No:	2022

	within Polymeric matrices	405579 on 2nd September 2022	
P136	A nanocomposite of fluorescent gold nanocluster conjugated crumpled mxene nanosheets and Applications	Granted Indian Patent No: 404681 on 26th August 2022	2022
P137	Conjugates of bf2-oxa-smaragdyrin and method of preparation thereof	Granted Indian Patent No: 397740 on 26th May 2022	2022
P138	Composite polymeric nano formulation	Granted Indian Patent No: 389292 on 15th February 2022	2022
P139	Method for modification of carbon fibers for improving tensile properties	202221005350	2022
P140	A system for correction of refractive errors without human intervention	Granted Indian Patent No: 388060 on 31st January 2022	2022
P141	An economical, cosmetic solution prepared with a novel polymer and Rose Bengal dye combination having extended spectrum antimicrobial photodynamic Inactivation property purposed for use as a nail enamel polish or paint or lacquer and similar applications thereof.	PAT/BS/204308001-1/22-23	2022
P142	Low-Cost Clean-Room Free Fabrication of Polymeric Microneedles Patch	PAT/BS/154300003-1/22-23	2022
P143	Ultrasound probe cover with a prefilled and peelable gel pouch purposed for prevention of cross-contamination during diagnostic ultrasonography.	PAT/BS/204308001-2/22-23	2022
P144	In-SituForming Haemostatic Adhesive Polysaccharide-based Hydrogel Prepared via Dual Mechanism - Nucleophilic Substitution and Ionic Crosslinking	PAT/BS/20002419-1/22-23	2022
P145	Oral spray containing herbo-minerals constituents for	PAT/BS/204300009-1/22-23	2022

	prophylactic use in upper respiratory tract infection and preparation method thereof	3	
P146	Affordable, Multifunctional gelatin sponges for complete post-surgical management of oral and maxillofacial surgery and method of preparation thereof	PAT/BS/30003829-1/22-2 3	2022
P147	Needle Cap with lever for the prevention of needle-stick injury	PAT/BS/204308001-3/22-2 3	2022
P148	An innovative solution, gel or paste for the prevention and cure of Mucositis especially secondary to cancer chemotherapy or other etiologies originating elsewhere in the mucosal surface thereof.	PAT/BS/204308001-4/22-2 3	2022
P149	A low-cost solid state chloride sensor for biomedical applications	PAT/BS/20002873-1/22-23	2022
P150	A method of rapid production of metallic nanoparticles aided with ultra-fast, precise pencil proton particle accelerator as produced and the use thereof	PAT/BS/P12038-1/22-23	2022
P151	Inflammation responsive intraarticular in situ composite gel for the pain management in arthritis	PAT/BS/204308001-5/22-2 3	2022
P152	Microneedle-based Transdermal Botulinum Toxin Patch for Treating Wrinkles	PAT/BS/204308001-6/22-2 3	2022
P153	Milk protein emulsifier based fortified ice-cream for improved sperm function	PAT/BS/20002408-3/22-23	2022
P154	Phytoestrogen based Vaginal inserts for Menopause management	PAT/BS/204308001-7/22-2 3	2022
P155	Ayurveda based Intrauterine contraceptive device	PAT/BS/204308001-9/22-2 3	2022
P156	Ayurveda based Rectal suppositories for Polycystic Ovary Syndrome	PAT/BS/204308001-8/22-2 3	2022
P157	A Face Sheet Mask for Alleviating Headache and Mood Elevation	PAT/BS/204308001-10/22-23	2022
P158	Tissue Auto-fluorescence spectrum analyzer	PAT/BS/204308001-11/22-23	2022
P159	Novel NIR responsive dye (BF2 -oxasmaragdyrin) loaded liposomes for Breast cancertheranostics	PAT/BS/173300013-2/22-2 3	2022

P160	Phytochemical drug-based soya lecithin- nanoparticle for the improved topical penetration towards synergistic management of psoriasis	PAT/BS/194301001-1/22-23	2022
P161	A portable device to detect level of saltiness in various food materials	PAT/BS/20002873-2/22-23	2022
P162	Affordable On Demand Sonophoresis Based Device for Pain Management	PAT/BS/30003829-2/22-23	2022
P163	Highly sensitive non-enzymatic lactate sensor fabricated using a mixture of electrodeposited nickel oxide film	PAT/BS/20002873-3/22-23	2022
P164	Gravimetric variance of elongation-measuring portable, easily deployable, economical, multipurpose, one-is-to-multiuser fluid regulatory alarm system for infusion pump independent medical intravenous fluid therapy and body fluid drainage flow regulation	PAT/BS/204308001-9/21-22	2022
P165	Method and formulation of Biodegradable films for food packaging	PAT/BS/194301001-4/22-23	2022
P166	A cost-effective sperm count immunodiagnostic test for examination of the male infertility	PAT/BS/20002408-4/22-23	2022
P167	Composite vaginal hydrogel for enhanced sperm capacitation in successful pregnancy outcomes	PAT/BS/20002408-5/22-23	2022
P168	U-Can: A low-cost bioimpedance measurement device for cervical cancer screening	PAT/BS/20002873-5/22-23	2022
P169	Lycopene based gel/cream for sunburn/cosmetic applications and preparation method thereof	PAT/BS/30003829-3/21-22	2021-22
P170	Biodegradable fluorescent liposomal nanocomposites and method of preparation thereof	Granted Indian Patent No: 372447 on 22th July 2021	2021
P171	A system for selectively actuating brakes of a vehicle through an accelerator pedal	202121014708	2021
P172	An assembly for reducing aerodynamic drag on a wheel of a vehicle	202121014284	2021
P173	Mechanical collapsible buckle	202121012263	2021
P174	A mechanism for adjusting angular orientation of a foot pedal and a foot pedal thereof	202121009838	2021
P175	Polycaprolactone based plasmonic nanoshells and	Granted Indian Patent No:	2021

	applications thereof	359768 on 26th February 2021	
P176	A method for preparation of ultra- small polymeric nanoparticles	Granted Indian Patent No: 359332 on 24th February 2021	2021
P177	A process for preparation of Chitosan-based hydrogel	Granted Indian Patent No: 356496 on 22nd January 2021	2021
P178	A composite comprising of doxorubicin-alginate conjugate and non-steroidal anti- inflammatory agent and process for preparation thereof	Granted Indian Patent No: 355324 on 05th January 2021	2021
P179	Gland-nut assembly transit-port on a non-invasive ventilation mask purposed for leakproof insertion and positioning of any size feeding-tube.	PAT/BS/204308001-4/21-2 2	2021
P180	Anti-thrombophlebitic sequentially coated intravenous cannula with in- situ gelation property for maintenance of extended duration Venous patency.	PAT/BS/204308001-5/21-2 2	2021
P181	A microneedle-scaffold augmented wound-healing, anti-inflammatory and hemostatic device with additional features of deep tissue penetration, nanomaterial coated sustained drug delivery, extended spectrum anti-microbial property and enhanced gradient-absorbance capacity of tissue fluid.	PAT/BS/204308001-6/21-2 2	2021
P182	Real-Time Wearable Atomized Drug Delivery System Based on Tri-Parameter Sensing	PAT/BS/204308001-7/21-2 2 (Patent of addition)	2021
P183	Synthesis of bio-responsive drug loaded self-assembled cus hollow nanoclusters and their applications thereof	PAT/BS/134303002-2/21-2 2	2021
P184	Mediit™	Trademark - TM/BS/204308001-2/21-2 2	2021
P185	Nanobios triple protection reusable Half face mask	DES/BS/204308001-1/21-2 2	2021

P186	Gplasmo-protici	TM/BS/P12038-1/21-22	2021
P187	Near infra-red light responsive gold decorated solid lipid nanoparticles and process for preparation thereof.	IPA No. 202121006011	2021
P188	Hyaluronic acid, graphene, gold Coated poly-(lactic-co-glycolic acid) nanostructures and a process for its preparation.	IPA No. 202123024390	2021
P189	Drug loaded nanohybrids.	IPA No. 202121012660	2021
P190	Plasmonic anucleate cellular nanovesicles as theranostic agents.	IPA No. 202121012661	2021
P191	Method for preparing drug loaded- fluorescent gqds embedded mesoporous silica nanostructure for Tumor ablation.	IPA No. 202121021279	2021
P192	A paper-based colorimetric dipstick For albumin and creatinine and a point-of-care system using same	IPA No. 202121017467	2021
P193	Cdte quantum dots-based ph- dependent fluorescent biosensor films and optical reader for serum electrolytes measurement	IPA No. 202121024440	2021
P194	Device for detection of sodium and potassium concentrations in serum	IPA No. 202121023851	2021
P195	"A lateral flow assay strip with paper shunt or spacer pad and polymer barrier block embedded with human-specific monoclonal antibodies against sperm-coating antigens 4e6 and seminal vesicle-specific antigen (svsa) for ascertaining sexual intercourse in a rape victim using immune-Chromatographic techniques."	IPA No. 202121044613	2021
P196	A portable, cryogenic, ecofriendly, economical and self-sustaining scalp cooling device to prevent and treat chemotherapy-induced alopecia in cancer patients and Thereof	IPA No. 202121045308	2021
P197	TPGS comprised gold coated poly-(lactic-co-glycolic acid) nanostructures and a process for its preparation	Granted Indian Patent No: 354678 on 29th December 2020	2020

P198	Triple action concoction for the complete postoperative management after partial or total knee replacement and process for Preparation thereof	Granted Indian Patent No: 354046 on 18th December 2020	2020
P199	A process for synthesis of protein derived branched gold nanostructures	Granted Indian Patent No: 353933 on 17th December 2020	2020
P200	Fluorescent gold nanorods and method of preparation thereof	Granted Indian Patent No: 350710 on 3rd November 2020	2020
P201	Plasmonic triangular gold and silver nanoparticles as tools for machine-free nucleic acid amplification assays	202021046398	2020
P202	Hemosealant composition and process for preparation thereof	Granted Indian Patent No: 347890 on 28th September 2020	2020
P203	Cyclodextrin capped gold nanostructures and a method of preparation thereof	Granted Indian Patent No: 346767 on 15th September 2020	2020
P204	Dual therapeutic disintegrable gnr- liposome nanohybrid for plasmonic photothermal cancer theragnostic	Granted Indian Patent No: 345343 on 27th August 2020	2020
P205	Targeted polymeric nano-complexes as drug delivery system	Granted Indian Patent No: 344742 on 21st August 2020	2020
P206	POINT-OF-CARE DEVICE FOR DETECTION AND QUANTIFICATION OF VITAMIN B12	202021008083	2020
P207	Nano-in-micro formulation as Biosensors	Granted Indian Patent No: 339797 on 29th June 2020	2020
P208	Near infra-red hybrid nanomaterials and graphene oxide for theranosticsApplications	Granted Indian Patent No: 339645 on 29th June 2020	2020
P209	Pharmaceutically active Formulation for healing bone fractures	Granted Indian Patent No: 339582 on 26th June 2020	2020
P210	Glutathione induced aggregation of gold nanobipyramids: a plasmonic Bio-sensor	PAT/BS/134303002-1/20-21	2020

P211	Facile synthesis of colloiddally stable Mxenes quantum dots and uses thereof	PAT/AC/174363001-1/20-21	2020
P212	Fabrication of polyethyleneimine Conjugated fluorescent mxene nanosheets	PAT/AC/174363001-2/20-21	2020
P213	Anastomosis-au-ag aided Nano radio sensitizers for metastatic cancers	PAT/BS/P12038-2/20-21	2020
P214	Green, immunecheckpoint inhibitor targeted peg-poly-l-arginine coated, coffee bean-gold nanoformulation, with optimized precise pencil proton particle accelerator-enabled high-sensitivity, safe nanoscale delivery assembly for deep-seated Tumors	PAT/BS/P12038-1/20-21	2020
P215	Biocompatible polyvinyl alcohol- sodium alginate-green tea extract- aloe vera extract 3d sponges/scaffolds and method of Synthesis thereof	PAT/AC/174360004-3/20-21	2020
P216	Biodegradable hyaluronic acid decorated polymeric nanoparticles for localized cancer nanomedicine: A one-pot synthesis	IPA No. 202021032490	2020
P217	Green synthesis of pegylated- tungsten disulfide quantum dots	IPA No. 202021037515	2020
P218	Process for preparing fluorescent protein nanoparticles	IPA No. 202021026511	2020
P219	Self-assembled niclosamide- hyaluronic acid conjugate micelles for site-selective regression of tumor and tumor spheroids: synthesis and applications thereof.	IPA No. 202021038024	2020
P220	Highly reproducible and scalable preparation of platinum integrated Gold nanorods and their uses thereof	IPA No. 202021032307	2020
P221	Hyaluronic acid functionalized plga nanoparticles for localized cancer nanomedicine and a process of.	IPA No. 202021032490	2020
P222	Gold nanobipyramid based plasmonic biosensor and a method Thereof for detection of glutathione.	IPA No. 202021033612	2020
P223	Protein biomarkers for plasmodium falciparum malaria	201922050215	2019

P224	Synthesis of meso-tritoyl-bf2-oxasmaragdyrin based quantum dots	201921040093	2019
P225	Zein-gold nanoshells and applications thereof	Granted Indian Patent No: 319491 on 30 th August 2019	2019
P226	Multifunctional polymeric nanocarrier	Granted Indian Patent No. 317866 on 07 th August 2019	2019
P227	Hydrogel for post- operative treatment of cancer	PAT/BS/134303002-2/19-20	2019
P228	Method for fabrication of polymeric Microneedles	IPA No. 201921021470	2019
P229	Plug phase identification by simultaneous voltage sensing for solving load imbalance	201821021947	2018
P230	Method for metabolic re-modelling chlorella fc2 strain at lipid induction phase	201821021744	2018
P231	A clutch-less transmission system for an electric/ hybrid vehicle for seamless gear engagement	201821009522	2018
P232	"Medradio band ook transmitter"	201821003907	2018
P233	Trademark application for proto- photoxil (word) in classes 05, 10 And 44.	Trademark Filed 2018	2018
P234	Trademark application for go-Photofil (word) in classes 05, 10 and 44.	Trademark filed 2018	2018
P235	Antagomir based novel detection of Oral cancer using colour inducing polymer sensor	PAT/BS/RS-1/17-18	2018
P236	Trademark application for Nanotorrid in class 5	TM/BS/11I300008-1/18-19	2018
P237	Diagnosis of genetic and neurological disorder through dermatoglyphics studies using in Screen fingerprint sensor device	PAT/BS/RS-1/18-19	2018
P238	Filing of Indian trademark application in respect of innovative work on "polymeric nanocubons nanofillers for various application	TM/BS/11I300008-2/18-19	2018
P239	Nir light responsive red emissive biodegradable nanohybrids for cancer theranostic	PAT/BS/134303002-3/18-19	2018
P240	Ppc nanocubons® nanofillers for Various application	IPA No. PAT/BS/11I300008-2/18-19	2018

P241	Point of care detection of hemoglobin with antimicrobial (cyanide free) property	IPA No. PAT/BS/P16111-1/18- 19	2018
P242	Design and development of point-of-care test for tsh, t3 and t4 hormones in whole blood	PAT/BS/184306002-1/18-1 9	2018
P243	Biodegradable plasmonic cells for drug delivery and cancer theranostics	PAT/BS/134303002-4/18-1 9	2018
P244	Fluorescent hollow mesoporous silica and method of preparation thereof	IPA No. 201821022718	2018
P245	Liposomal formulations for treatment of cancer	IPA No. 201841032747	2018
P246	Detection kit for diagnosis of Cervical cancer by quantification of visual inspection of acetic acid	IPA No 201841016604	2018
P247	Method for preparing graphene quantum dots (gqds) and uses thereof	201721038918	2017
P248	A process for preparation of protein nanoparticles	201721028321	2017
P249	Autonomous, personalized and wearable drug delivery device for clinical management of chronic disease conditions	201721020761	2017
P250	A biomarker panel for dengue fever infection	201721018611	2017
P251	Coated hollow fiber membrane material as a substrate for enhanced liver cell attachment and a process for manufacturing the same	201721012545	2017
P252	Protein biomarkers for gliomas	201721012423	2017
P253	On-chip delay measurement circuit	201721010982	2017
P254	A method of fabricating high two-dimensional electron gas density yielding zinc oxide heterostructure	201721010866	2017
P255	A method of fabricating zinc oxide based heterostructure for high electron mobility transistor	201721007309	2017
P256	Green chemistry approach for zinc oxide nanoparticles decoration onto glass fiber pre-filter paper: fluorescent and antibacterial paper-based applications.	PAT/BS/111300005-2/17-1 8	2017
P257	Trademark application under the Name of “urine dip stick reader”	TM/BS/124303011-2/17-1 8	2017
P258	Tocophotoxil	Trademark Filed in 2017	2017

P259	Uridsa - urine dip strip reader	Trademark Filed TM/BS/124303011-2/17-1 8	2017
P260	Wearable trans-epi-dermal/dermal Drug delivery and diagnostic gadget based on microneedles	IPA No. 201721020761	2017
P261	Alloy, bi and trimetallic nanoparticles for photothermal Therapy	IPA No. 201721029703	2017
P262	A system for assisting paralyzed and blind people in the name of indian institute of technology, Bombay.	IPA No. 201721011429	2017
P263	The art, method, manner, process and system of protein nanoparticles Crosslinked with natural aldehydes	IPA No. 201721028321	2017
P264	Methotrexate loaded gellan-gum microparticles Synthesis and application thereof	IPA No. 201721025703	2017
P265	Fluorescent graphene nanostructures: synthesis and anti-Counterfeiting applications thereof	IPA No. 201721038918	2017
P266	Zinc oxide nanoleaves, scalable disperser assisted sonochemical method for synthesis and Antibacterial application thereof	IPA No. 201721031696	2017
P267	Red luminescent graphene quantum dots, synthesis and applications thereof	IPA No. 20172106198	2017
P268	The process of synthesis of ultra- small iron oxide nanoparticles and metal/non-metal doped ultra-small iron oxide nanoparticles for mr Imaging	IPA No. 201721042818	2017
P269	Phytosomal nanoformulation of cissus quadrangularis as local application for bone healing	IPA No. 201721002500	2017
P270	Fins, cost affordable wearable device designed for paralyzed and Blind people	IPA No. 201721011429	2017
P271	A handheld pulse oximeter system	201621040873	2016
P272	Near infra-red responsive thermosensitive nanoshells	201621009168	2016
P273	Multilayer nanocomposite	Granted Indian Patent No: 271416 on 19 th February 2016	2016

P274	Fluorescence lateral flow immunoassay for point-of-care detection of orthopedic implant associated infection	IPA No. PAT/BS/124303011-1/16-17	2016
P275	Design Considerations for Transmitter and Receiver for Personal Health Care Applications	201621001014	2016
P276	SAW resonator oscillator based injection locked OOK transmitter for healthcare applications	201621000639	2016
P277	Porcolor - portable colorimetric Strip reader	TM/BS/124303011-2/16-17	2016
P278	Preclam-pcd -point of care diagnostic test kit for preeclampsia	Trademark Filed TM/BS/124303011-1/16-17	2016
P279	Near infra-red responsive thermosensitive nanoshells and process for making the same	IPA No. 201621009168	2016
P280	Process for the synthesis of multi- fluorescent carbon nanostructures	IPA No. 201621011794	2016
P281	Protein-gold nanohybrids and a process for its synthesis	IPA No. 201621018272	2016
P282	Nano-engineered bioresorbable polymer composite for bone-soft tissue fixation applications	IPA No. 201611012973	2016
P283	Protein autoantibody biomarkers for gliomas	3028/MUM/2015	2015
P284	Label-free method for detection and quantification of protein biomarkers	2587/MUM/2015	2015
P285	Oracan-d: oral cancer detection	Trademark Filed TM/BS/124303011-3/15-16	2015
P286	Deicont- detection of Ionic impurities in water	Trademark Filed TM/BS/124303011-3/15-16	2015
P287	Porflor - portable fluorescence reader	Trademark TM/BS/124303011-1/15-16 6 Granted	2015
P288	Liponions as a multi-colour fluorescent biolabelling probe	IPA No. 2368/MUM/2015	2015

P289	Microneedle patch of reinforced polymer with vaccine loaded silk nanoparticles for painless vaccination and thermally stable vaccine	IDF No. PAT/BS/10330401- 2/15 16	2015
P290	Polycaprolactone (pcl) microparticles loaded in chitosan in situ gelling system as a drug delivery system for bone diseases and bone repair/regeneration	IPA No. 3471/MUM/2014	2014
P291	The art, method, manner, process and system of preparation of poly (n-vinyl caprolactam) based thermoresponsive transdermal drug delivery system	IPA No. 3808/MUM/2014	2014
P292	Polymer based drug delivery system	IPA No. 3278/MUM/2014	2014
P293	Electrospun nano-composite scaffold based on poly-l-lactide-co-&-caprolactone, gelatin and nano-hydroxyapatite	4002/MUM/2013	2013
P294	Fluorescent polysaccharide based ph responsive compositions and methods of preparation thereof	IPA No. 2002/MUM/2013	2013
P295	Protein biomarkers for plasmodium vivax malaria	2195/MUM/2012	2012
P296	Protein biomarkers for leptospirosis	1907/MUM/2012	2012
P297	An electric power steering system of a vehicle and method thereof	906/MUM/2011	2011
P298	Multi-layer nanocomposite	811/MUM/2011	2011
P299	A system for testing printed circuit board (pcb) sub-assembly and methods thereof	82/MUM/2011	2011
P300	System for welding	230/MUM/2010	2010
P301	A process of manufacturing of non-fibrillating cellulosic fibres	2334/MUM/2009	2009
P302	A stable delivery system for statin Family drugs	IPA No. 2093/Mum/200 8	2008
P303	Communication system with novel bus-shorting	386/MUM/2004	2004
P304	Process of growing metal nanoparticles in the polymeric matrices	IPA No. PAA2556/SG/SBS/Y	
P305	Fluorescent strip reader - electronic device for application in medical diagnostics	Design Registration No. 292001	

P306	Chitosan-paah gel: a novel antibacterial agent for treating superficial and implant related deep bacterial infections	With Attorney	
P307	Multifunctional gold deposited Protein nanoshells for theragnostic applications	With Attorney	
P308	Multifunctional go-au plga as nanocomposite filler, contrast agent and for photothermal killing of Resistive microbes in dental cavity	With Attorney	
P309	Nir light responsive solid lipid Nanoparticle synthesis and applications thereo	With Attorney	
P310	Ozonotherapy as an adjunct to control multiple drug resistant (mdr) and xdr (extensive drug Resistant) tuberculosis	With Attorney	
P311	Trademark application for thermolid (word) in classes 05, 10 And 44	With Attorney	
P312	Room temperature synthesis of bio- compatible porous silica nanoparticles using lipid as a structure directing agent	With Attorney	
P313	Rapid and scalable microwave assisted hydrothermal method for synthesis of fluorescent carbon spheres	With Attorney	
P314	Red emissive liposomal nanopitchers for localized diagnosis and phototriggered tumour ablation	With Attorney	
P315	One step biocompatible folic acid Stabilized end-end assembled gold nanorods and usage thereof	With Attorney	
P316	Trademark application for thermo- photoxil (word) in classes 05, 10 And 44	Trademark Filed	
P317	Trademark application for cefugel, Chicef	Trademark under filing	
P318	Trademark application for chisep or Chispon	Trademark under filing	
P319	A low-cost fabrication method of Polymeric microneedles for transdermal drug delivery	IPA Filing under process	
P320	Trademark application under the name of “nanobioxil”	Application No. 4399683, 4399684, 4399685, 4399686 And 4399687	

P321	Drug loaded cell derived biological nanohybrids for cancer medicine and their use of	With attorney	
P322	A simple design of biocompatible dodecyl ethyl dimethyl ammonium bromide (dmab) stabilized au-pt Bimetallic plasmonic nanorods	With attorney	
P323	"B-pyranostics", trademark	Application No. 4399680, 4399681 and 4399682	
P324	Filing of indian trademark application in respect of innovative work on "h-photofluor"	TMA No. 4104107and 4104108	
P325	"Auroplatids", trademark	TMA No. 4860086, 4860087, 4860088 and 4860089.	
P326	"Auronanocell", trademark	TMA No. 4860077, 4860078, 4860079, 4860080 and 4860081.	
P327	"Carbanosil", trademark	TMA No. 4860082, 4860083, 4860084 and 4860085.	

List of MTech and PhD students graduated (more than 75 M.Tech and 40 PhD's graduated)

Year	M.Tech	Name	Thesis Title
2024-2025	Ongoing M. Tech	Bhavuk Mittal	Nanopism letrozole based composite vaginal hydrogel
2024-2025	Ongoing M. Tech	Nitin Pawar	Development of low-cost handheld device for detection of Fructosamine
2024-2025	Ongoing M. Tech	Pankaj Bhoje	Stimuli responsive drug delivery system
2024-2025	Ongoing M. Tech	Jagruti Mahendra Patil	Non invasive cancer progression monitoring via Reverse Iontophoresis: A focus on Tryptophan, Kynurenine, and Phenylalanine Ratios
2024	M.Tech	Vedant Shirsekar	Development of a Solid-State Nitrate Sensor for Environmental Monitoring

2024	M.Tech	Aritra Daspoddar	Design and development of Uric Acid Based Point-Of-Care Testing (POCT) device for medical diagnostic applications
2024	M.Tech	Rahul Kumar Gupta	Design and development of Iontophoretic drug delivery devices
2024	M.Tech	Shabana Falak	Smart Drug Delivery system for the prevention and Monitoring of Infection at the surgical site
2024	M.Tech	Yashvi Lodaya	Intra articular drug delivery for pain management and post surgical pain for osteoarthritis patients
2024	M.Tech	Monalisha Mallick	Bioengineered Chitosan sponges for Infection-Free Wound Management
2017	M.Tech	Mukesh Kumar Singh	Development of mobile equipment for haemoglobin determination
2017	M.Tech	Yasodha Kannan.S	Hemostatic wound dressing for trauma care
2016	M.Tech	Singh Rahul Kumar Gopal	Development of Low Cost Antigen-based Rapid Detection Test for Tuberculosis “Lateral Flow Immunoassay Technology”
2016	M.Tech	Dommety Jagadeesh	Quantitative Urine Strip Reader
2016	M.Tech	Sohini Sengupta	Carbon Dots: Synthesis, Characterization, ‘Turn-off’ Sensing for Silver Ions and ‘Turn-on’ Sensing for Biothiol
2016	M.Tech	Y.Shwetha Hymavathi	Non-Invasive delivery of NSAIDs for Arthritis Pain Management
2015	M.Tech	Kulkarni Amey Pralhad	Instrumentation for Fluorescence Detection
2015	M.Tech	Richi Sethi	Gold coated Biodegradable nano-carriers for cervical cancer therapeutics
2015	M.Tech	Rupesh Gottipalli	Gold Nanoshell-Polymer Nanoparticles for Cancer Treatment and as Potential Theranostic Agents
2015	M.Tech	Sayantana Ghosh	Preparation of alginate microsphere using microchannels

2015	M.Tech	Tanuj Kumar Paraste	Blood plasma separation using microdevices
2014	M.Tech	Paridhi Jain	Phosphate sensing using semiconductor Quantum Dots
2014	M.Tech	Abhishek Misra	Modelling, Design and Fabrication of Microneedles for Transdermal Drug Delivery
2014	M.Tech	Topkar Harshad Anant	Nanomedicine Approach for Prevention of Biofilm Mediated Periprosthetic Infection
2014	M.Tech	Neelesh Gangwar	Development and Characterization of Thermo sensitive carrier for Drug delivery
2014	M.Tech	Gordhan Bagri	pH Dependent Ion Sensing : Estimation of Sodium Ions
2014	M.Tech	Shivam Verma	Quantum dots based ratiometric pH sensor
2013	M.Tech	Sen Abhishek Abir	Portable multi-analyte sensor for detection of renal disease
2013	M.Tech	Pinaki Chandra Dey	Transdermal Delivery of Vaccines using Microneedle Array
2013	M.Tech	Ajay Kumar Sisodia	Amperometric Enzyme Based Biosensor
2013	M.Tech	Belusonti V Karthik	"Magneto-polymeric nanocarriers for MRI imaging and cancer therapy"
2013	M.Tech	P Arun Kumar	Polymerosomes in Cancer Theranostics
2013	M.Tech	Monica Jyotsna Minj	Gold nanoshelled PLA particles as theranostic agents
2012	M.Tech	Krishnaiah Byagari	A novel PLGA/Pluronic pentablock copolymeric system for drug delivery
2012	M.Tech	Devender Kumar	Gold nanostar for photothermal therapy for cancer treatment
2012	M.Tech	Atibha Behl	Transdermal Drug Delivery System Using Microneedles
2012	M.Tech	Neha Dubey	MEMS based Biosensor
2011	M.Tech	Singh Abhishek Arjun Singh	Mesoporous Silica Nanoparticles for Cancer Therapy
2011	M.Tech	Patel Rajeshkumar Bhagvanbhai	Magnetic Polycaprolactone Nanoparticles for Anticancer Drug Delivery

2011	M.Tech	Vrishty Rustagi	Multianalyte Biosensor for Renal Clinical Analytes
2011	M.Tech	Uttam Narayan Chavan	Glucose biosensors based on fluorescence resonance energy transfer (fret) using nir dyes
2011	M.Tech	Tijore Ajay Sanjay	Anticancer Drug Delivery using Thermosensitive Triblock Copolymer
2011	M.Tech	Adam Shirish Govind	MEMS in Determination of Renal Clinical Analytes using Optical Biosensor
2010	M.Tech	Desai Parind Mahendrak umar	Gold nanoshells with thermosensitive liposomes for breast cancer therapy
2010	M.Tech	Shah Anant Jigar	Gold nanorods coated Pnipam microgel for Cancer Therapy
2010	M.Tech	Janak Prasad	Alginate Silica Microspheres for Cholesterol Biosensing
2010	M.Tech	Solanki Sanketkumar Vinodkumar	Alginate Microspheres Loaded with Magnetic nanoparticles for Combined Imaging and Drug delivery
2010	M.Tech	Sonara Dhirenkumar Keshavlal	Magnetic polymer nanocomposites for dual drug delivery & hyperthermia applications
2010	M.Tech	Dharamsoth Narendra Naik	Preparation and characterization of solid lipid nanoparticles for Anticancer drug delivery
2009	M.Tech	R.Keerthi Prasad	'Nano-in-Micro'based approach for delivery of immunomodulating agent
2008	M.Tech	Hemant Borkar	Nanomagnetic layered double hydroxides for drug delivery applications
2008	M.Tech	Saravjeet Singh	Design of a micropump for Biomedical applications
2007	M.Tech	Nisha Nambiar	Micromachined Optical Urea Biosensor
2007	M.Tech	Jayanth Daniel	Micro fabrication of novel optical bilirubin sensor and sensing system

Year	Ph.D/D.D	Name	Thesis Title
2023	Ph.D	Barkha Singh	Designing and Development of Nanomaterials for Cancer theranostics
2022	Ph.D	Sourabh Mehta	An Ultrasound-Responsive Theranostic Cyclodextrin-Loaded Nanoparticle for Multimodal

			Imaging and Therapy for Atherosclerosis
2021	Ph.D	Prabhuraj R S	Drug impregnate nanoparticles for the treatment of pancreatic and breast cancer.
2021	Ph.D.	Mukti Vats	Synthesis and Pre-clinical evaluation of PCLIR NPs as Cost-effective, Biodegradable and Theranostic agent for Photothermal therapy of Solid tumours
2021	M.Sc.Ph.D .DD	Ashish Jha	PPC NanoTorrid® Structure for Photothermal Therapy in Breast Cancer
2021	Ph.D	Siddhartha Das	Electrospun Biodegradable Nanofibres for Tissue Engineering in Maxillo-Mandibular Region
2021	Ph.D	Nishant Kumar Jain	Development of nanocarrier systems for novel compound screened with anticancer activity
2021	Ph.D	Arpan Pradhan	Lipid Nanoformulations of Microtubule Targeting Agents for Cancer Therapy
2016	Ph.D	Piyush Kumar	Multifunctional Near-Infrared Dye Loaded Polymeric Nanoparticles For Photothermal Therapy in Cancer
2016	Ph.D	Roshni Ramachan dran	Nano engineered calcium sensor for early detection of milk fever in dairy cattle
2016	Ph.D	Lina Pradhan	Stimuli sensitive lipid grafted mesoporous magnetic nanoassembly for cancer thermo-chemotherapy
2016	Ph.D	Rashmi Dilip Chaudhari	Multiple Analyte Biosensors
2016	Ph.D	P.Arunkumar	Synthesis, Characterizations and Performance Evaluation of Composite Injectable Chitosan Gel as a Potential Local Drug Delivery System for the treatment of Osteoarthritis and Cancer
2015	Ph.D	Dhanya Subhash	Gold Nanoshells and Maleic Acid Incorporated Poly-(N-isopropylacrylamide) Nanogels for Dual Responsive Drug Delivery Applications
2015	Ph.D	R Aravind Kumar	Liposome-gold nanoparticles for photothermal therapy of cancer
2015	Ph.D	Asifkhan S	Hybrid Nanostructures for Cancer Application
2015	D.Deg	Suryawanshi Ajinkyakumar Ramesh	Transdermal Drug Delivery System: Iontophoresis

2013	D.Deg	Ankit Agarwal	Hybrid Gold Nanostructures
2011	Ph.D	Swati M.	Nanoengineered Alginate Microspheres towards an optical urea biosensor
2011	Ph.D	Joshi Abhijeet Balwantra	Nanoengineered Lactate Biosensor
2010	Ph.D	Himanshu Sekhar Panda	Layered Double Hydroxide Based Nanostructured Hybrid Materials and Their Applications for Drug Delivery
2010	Ph.D	Rahul Dev Jayant	In-vitro & In-vivo evaluation of nanoengineered alginate carries for the control of localized implant inflammation: towards the development of an implantable Glucose Biosensor
2010	Ph.D	Ayesha Chaudhary	Glucose Monitoring Using Alginate Microsphere Biosensors