

Sponsored Research and Consultancy Division

BITS Pilani
Pilani Campus

Newsletter

Vol:01

Issue: 01(Inaugural issue)

April to October(2021-2022)

MESSAGE FROM THE DIRECTOR



Season's Greetings to everyone!

I extend my heartiest congratulations to the entire team who has worked hard in realizing and releasing the inaugural issue of the SRCD News Letter. SRCD is a one-of-its-kind News Letter, which will share the progress of ongoing research and consultancy projects with everyone, including the alumni and the faculty of BITS Pilani.

The Institute has been proud of its great innovation and research heritage. From faculty to students, everyone is dedicated to adding to this heritage and taking the legacy forward.

I hope this issue will be a harbinger of motivation for all of us.

Thank You

Prof. Sudhirkumar Barai

FROM THE DESK OF ASSOCIATE DEAN, SRCD



Welcome to the inaugural issue of the SRCD Newsletter of BITS-Pilani Pilani campus, Rajasthan. The main objective of this newsletter is to disseminate the status of sponsored research and consultancy project activities to our faculty members and also to our esteemed alumni. This issue mainly highlights the information about research projects sanctioned in the current financial year and statistics about ongoing and applied projects of various departments.

I hope this issue will serve the purpose and based on the feedback received from the readers, some more information will be included in forthcoming issues.

Thank You

Prof. Navneet Gupta

Research Projects



Project Title: *Nai Disha*
Funding Agency: *Seth Motilala PG College, Jhunjhunu*
Sanctioned Amount: ₹4,80,000
Name of PI: *Dr. Arya Kumar*
Designation: *Professor*
Department: *Economics & Finance*

Abstract: Strategic plan preparation for future growth of the college in the coming 5-10 years. It involved extensive data analysis for the past and interaction with different stakeholders to come out with clear perspective and direction for future growth, including financial implications. Work involved chalking out Vision, Mission, Values and Strategic thrust on five key pillars - Curriculum, Faculty, Admissions, Placements, Alumni.



Project Title: *SWATCH*
Funding Agency: *Founding Years Learning Solutions*
Sanctioned Amount: ₹ 21,37,300
Name of PI: *Dr. Navneet Goyal*
Designation: *Professor*
Department: *Computer Science & information Systems*

Abstract: The project explores use of AI to make kindergarten schools safer for children. Involves real-time multi-modal analytics. Predictive and descriptive models will be developed and deployed.



Project Title: *Metal-catalyzed and Metal-free Strategy for the Synthesis of Modified Bile Acids as Novel Anticancer Agents*
Funding Agency: *Council of Scientific & Industrial Research (CSIR)*
Sanctioned Amount: ₹27,14,000
Name of PI: *Dr. Rajeev Sakhuja*
Designation: *Associate Professor*
Department: *Chemistry*

Abstract: The project will identify metal catalyzed/metal-free sustainable synthetic strategies for preparing modified bile acids under mild conditions as potential anticancer agents, and contribute significantly towards the idea of green chemistry.



Project Title: *Design, Synthesis, Pharmacokinetic and Pharmacodynamic Evaluation of Acridine and Related Moieties for the Treatment of Alzheimer's Disease*
Funding Agency: *Council of Scientific & Industrial Research (CSIR)*
Sanctioned Amount: ₹29,32,000
Name of PI: *Dr. Paritosh Shukla*
Designation: *Associate Professor*
Department: *Chemistry*

Abstract: Following activities will be taken in this project (i) synthesize new acridine type molecules that are active against Alzheimer's disease. (ii) investigation of *in-vitro* Biological, Pharmacodynamic, and Pharmacokinetic properties of the compounds. (iii) docking studies of the new molecules.



Project Title: *Doubling Farm Women's income: Entrepreneurship development through post-harvest and technology integration in arid zone*

Funding Agency: *Department of Science & Technology(DST)*

Sanctioned Amount: ₹70,20,481

Name of PI: *Dr. Srikanta Routroy*

Designation: *Professor*

Department: *Mechanical Engineering*

Abstract: In the proposed project, the focus will be on two agriculture produces i.e. Cucumis melo and Pearl Millet. The Artificial Intelligence (AI) based Decision Support System (DSS) will be developed for the supply and demand estimation of these two agriculture produces and their value added products capturing the relevant factors. This will also estimate the impact of proposed solar based process and technology for value added product(s), waste management with integrated farming systems, and optimized supply chain configuration through entrepreneur development at village level for these two agriculture produces.



Project Title: *Characterization of Indigenous Cow's Dung and Urine for Scientific Advancement and Development of Utility Items.*

Funding Agency: *Department of Science & Technology(DST)*

Sanctioned Amount: ₹31,04,162

Name of Investigators: *Dr. Pratik N. Sheth and Dr. Abhishek Suresh Dhoble (IIT BHU)*

Designation: *Associate Professor*

Department: *Chemical Engineering*

Abstract: In the present research project, a three-pronged approach is used to establish the supremacy and unique qualities/characteristics of Indigenous cows to cater the needs of the scientific community and fueling further scientific investigation in this area: i) A comprehensive chemical and metabolic profiling of Indigenous cow's dung and urine ii) Novel, high-throughput micro biome characterization iii) An open-access database clubbed with a query-based software tool chain to access the information from anywhere in the world freely. To cater to the needs of the rural population, above detailed characterization studies can be used in the development of many utility products.



Project Title: *Multilingual Conversational AI to Enhance Customer Experience*

Funding Agency: *Towards vision technologies (C-Zentrics) private ltd.*

Sanctioned Amount: ₹18,60,640

Name of PI: *Dr Yashvardhan Sharma*

Designation: *Associate Professor*

Department: *Computer Science & Information Systems*

Abstract: The project will improve upon customer conversation analysis to ensure and render better customer experience. The system developed would identify hidden context in the conversation and will be able to take actions proactively whether it be related to sales or support. The system will also be able to curate auto generated responses on the basis of real time interaction with the customer. The system should also be self-sufficient to identify the code switching.



Project Title: *Rendering Software Consultancy Services for 5G Cellular OTA Scanner to Hughes' office in Gurgaon*

Funding Agency: *HUGHES SYSTIQUE (P) LTD, Gurgaon*

Sanctioned Amount: ₹ 10,88,475

Name of PI: *Dr. Sandeep Joshi*

Designation: *Assistant Professor*

Department: *Electrical & Electronics Engineering*

Abstract: The objective is to develop a cellular signal scanning tool which is intended to perform 5G synchronization and broadcast signal detection, demodulation and decoding. It is required to develop a system model conforming to 3GPP specification that shall perform scanning function on NR 5G signal under nominal operating condition.



Project-1: *Specific Generation and system identification of environmental control system based on requirement analysis and system modeling.*

Funding Agency: *Defence Research and Development Organization (DRDO)*

Sanctioned Amount: ₹22,33,500

Name of PI: *Dr. Chennu Ranganayakulu*

Designation: *Visiting Professor*

Department: *Mechanical Engineering*

Project-2: *Technical guidance to Rangsons Thermal Management Projects*

Funding Agency: *M/s. Rangsons Aerospace Pvt. Ltd. Bangalore*

Sanctioned Amount: ₹ 7,08,000

Abstract Project 1: The object of this project is conceptualization of Environmental Control System for an unmanned combat aircraft being designed by ADE-DRDO. This involves suitable system identification, generation of system specification, generation of component specifications and preparation of flight test plans based on analysis and simulation using Dymola software.

Abstract Project 2: M/s Rangsons Aerospace Pvt. Ltd., Bangalore has got project from DARE-DRDO for design of Aircraft Pod Cooling air cycle machines and from ISRO for design of space man mission capsule. In these thermal manage projects, M/s Rangsons need technical guidance from BITS, Pilani as consultancy project.



Project Title: *Gender Advancement for Transformation Institutions (GATI)*

Funding Agency: *Department of Science & Technology (DST)-KIRAN*

Sanctioned amount: ₹7,99,200

Name of Nodal Officer: *Dr. Jyoti*

Designation: *Associate Professor*

Department: *Management*

Abstract: Project GATI aims to create an enabling environment for equal participation of women in science, technology, engineering, medicine and mathematics disciplines (STEMM) at all levels, addressing deep-rooted biases and stereotyping.

Project GATI pilots a sustainable self-assessment and accreditation model (as per requirement of National Assessment and Accreditation Council). BITS Pilani being the signatory institution to the GATI charter would be expected to commit to adopting its policies, practices, action plans and institutional culture and would be required to create SMART (Specific, Measurable, Achievable, Relevant and Time-bound) action plans for systemic and cultural transformation in regard to gender equity.



Project Title: *Contemporary Earthquake Potential Analysis along the central and Nepal Himalaya*

Funding Agency: *Center for Sustainability Science, Academia Sinica, Taiwan*

Sanctioned Amount: ₹ 10,93,500

Name of PI: *Dr. Sumanta Pasari*

Designation: *Assistant Professor*

Department: *Mathematics*

Abstract: The objective of this project is to estimate contemporary earthquake potential along different segments of Central and Nepal Himalaya that fall under the central seismic gap. For this purpose, seismic moment rates for each source zone will be calculated independently from the geodetic (GPS) strain rate and observed earthquake data. The ratio of geodetic to seismic moment rate will be evaluated to examine the accumulated versus released seismic energy. The difference in moment rates will be converted to its equivalent magnitude of the prospective earthquake in each seismogenic source area. The results inevitably contribute to the seismic hazard assessment in the area.



Project Title: *Organic Polymers for Photocatalytic Nitrogen Fixation*
Funding Agency: *Science and Engineering Research Board(SERB)*
Sanctioned Amount: ₹ 1,19,00,000
Name of PI: *Dr. Tanmay Banerjee*
Designation: *Ramanujan Fellow*
Department: *Chemistry*

Abstract: The objective of the project is to develop efficient, heterogeneous and robust, yet molecularly tunable, nitrogen to ammonia converting “soft” organic polymeric photocatalytic platforms and to develop a thorough photophysical and physicochemical understanding of the structure-property-activity relationship for the photocatalytic activity of such materials.



Project Title: *Sertraline intervention for enhancing anti-TB therapeutic regimen (SINERG)*
Funding Agency: *Council of Scientific & Industrial Research (CSIR)-IGIB*
Sanctioned Amount: ₹ 6,00,000
Name of PI: *Dr. Rajeev Taliyan*
Designation: *Associate Professor*
Department: *Pharmacy*

Abstract: The objective is to repurpose the drugs by evaluating the antidepressant clinical drugs-sertraline for Tuberculosis Mycobacterium infection.



Project Title: *Predictor and Analyzer of Security Threats (PAST): A model based risk analysis framework for critical interconnected infrastructures.*
Funding Agency: *IHUB NTHAC FOUNDATION IIT Kanpur*
Sanctioned Amount: ₹ 18,14,000
Name of PI: *Dr. Rajesh Kumar*
Designation: *Assistant Professor*
Department: *Computer Science & Information Systems*

Abstract: The objective of the project is to use cyber-risk management techniques over complex system-of-systems. The idea is to investigate different domain specific languages to showcase the disruption scenarios and analyze the safety, security, and usability of such infrastructures using statistical model checking techniques.



Project Title: *Design and synthesis of coordination polymers conduction*
Funding Agency: *Council of Scientific & Industrial Research (CSIR) under EMR Scheme*
Sanctioned Amount: ₹ 17,14,000
Name of PI: *Dr. Madhushree Sarkar*
Designation: *Associate Professor*
Department: *Chemistry*

Abstract: The objective of the proposal includes design and synthesis of porous coordination polymers (CPs) for proton conduction. Design principles will be based on targeting the following features in the CPs: (a) Minimizing the dependence of proton conduction on humidity and (b) Proton conduction under anhydrous condition. Another aim of this project is to correlate the crystal structure of the synthesized CPs with the proton conductivity for understanding the proton transfer pathways.



Project Title: *Interdisciplinary Life Science Program for Advanced Research and Education in Epigenetic and Genome editing.*

Funding Agency: *Department of Biotechnology (DBT)*

Sanctioned Amount: ₹9,01,80,320

Name of Coordinator: *Dr. Ashis Kumar Das*

Designation: *Professor*

Department involved: *Biological Sciences and Pharmacy*

Abstract: The DBT-BUILDER for BITS Pilani Pilani Campus, is an Interdisciplinary Life Science Program for Advanced Research and Education in Epigenetic and Genome editing in human diseases. The team is consist of faculty from the department of Biological Sciences and the department of Pharmacy. The mandate is to develop an interdisciplinary program in the named area and also enhance training the same.

International Research Projects



Project Title: *Collating and analyzing multi-modal, multi-lingual data for countering wildlife crime*

Funding Agency: *Google Asia Pacific Pte ltd*

Sanctioned Amount: ₹7,27,055

Name of PI: *Dr. Poonam Goyal*

Designation: *Professor*

Department: *Computer Science & Information Systems*

Abstract: The project aims to collate, sync, and analyze multi-lingual, multi-modal wildlife crime data that is present on the web and elsewhere (structured/unstructured). AI predictive and descriptive models will then be built to analyze the data with an overall objective of reducing wildlife crime.



Project Title: *Performance improvement of Solar thermal system using magnetic NanoFluids*

Funding Agency: *Department of Science & Technology India-South Africa*

Sanctioned Amount: ₹ 42,56,588

Name of PI: *Dr. Suvanjan Bhattacharyya*

Designation: *Assistant Professor*

Department: *Mechanical Engineering*

Abstract: The application of nanofluid in the solar energy field has a promising future. More experimental and numerical work needs to be conducted especially with CPVT systems. So, the objective of the project is to investigate thermohydraulic performance of a solar thermal system by using magnetic nanofluid at different flow regime. A magnetic active vortex generator is also proposed in this study for heat transfer enhancement in heat sinks and heat exchangers.



Project Title: *The System initiative: Systems biology augmented, stem cell- derived, multi tissue panel for rapid screening of drugs as potential COVID-19 treatments*

Funding Agency: *Common wealth scientific and industrial research origination(CSIRO) Australia*

Sanctioned Amount: ₹ 10,48,000

Name of PI: *Dr. S Murugesan*

Designation: *Associate Professor*

Department: *Pharmacy*

Abstract: It involves a multidisciplinary/multi-site team developing a rapid screening system with stem cells, systems biology and machine learning approaches and assessing the efficacy of already approved drugs against SARS-CoV-2 virus and all its variants of concern. Three promising candidates that will be subjected to evaluation in human ex vivo models followed to Phase 2-3 trials or human Phase 1 trials.



Project Title: *The System initiative: Systems biology augmented, stem cell- derived, multi tissue panel for rapid screening of drugs as potential COVID-19 treatments*

Funding Agency: *Common wealth scientific and industrial research origination(CSIRO) Australia*

Sanctioned Amount: ₹ 10,48,000

Name of PI: *Dr. Vinti Agarwal*

Designation: *Assistant Professor*

Department: *Computer Science & Information Systems*

Abstract: With very few approved therapies available to treat COVID-19, there is an urgent need to identify additional approved drugs i.e. repurpose drugs, especially those that are cost-effective, and able to inhibit viral replication, reduce COVID-19 symptoms, and prevent 'long COVID'. This project involves a multidisciplinary/multi-site CSIRO and BITS team to develop a rapid screening system with stem cells, systems biology and machine learning approaches, and assess the efficacy of already approved drugs against SARS-CoV-2 virus and all its variants of concern in the span of a year.



Project Title: *Artificial Intelligence and Block chain Enhanced privacy and security provisioning for healthcare applications*

Funding Agency: *Science and Engineering Research Board (SERB)*

Sanctioned Amount: ₹ 32,69,396

Name of PI: *Dr. Vinay Chamola*

Designation: *Assistant Professor*

Department: *Electrical & Electronics Engineering*

Abstract: The objective of this project is to develop artificial intelligence and block chain enhanced privacy preserving and secure operations for healthcare applications. This project is ASEAN Collaborative R&D grant supported project, and involves team members from National University of Singapore (NUS) and Hanoi University of Science and Technology, Vietnam.

Workshop/Seminar conducted through Sponsored Research

Title of Workshop: *BITS Pilani & DRDO Collaborative Interactions*

Department: *Mechanical Engineering & Civil Engineering*

Date: *April 24, 2021*

Venue: *Online*

Supported by: *BITS Pilani*

Coordinator: *Prof. Chennu Ranganayakulu & Prof. S.B. Singh*

Title of Workshop: *Manufacturing: Hindsight to Foresight (3D Printing & Design)*

Department: *Mechanical Engineering*

Date: *July 16,2021 to July 20,2021*

Venue: *Online*

Supported by: *AICTE Training & Learning (ATAL) Academy*

Coordinator: *Dr. Tribeni Roy*

Title of Workshop: *Rehabilitation and Retrofitting of Concrete Structures using FRP Reinforcements*

Department: *Civil Department*

Date: *July 25,2021 to July 29,2021*

Venue: *Online*

Supported by: *AICTE Training & Learning (ATAL) Academy*

Coordinator: *Prof. S B Singh*

Title of Workshop: *Intelligent and Collaborative Robotics*

Department: *Department of Electrical & Electronics Engineering*

Date: *September 13,2021 to September 17,2021*

Venue: *Online*

Supported by: *AICTE Training & Learning (ATAL) Academy*

Coordinator: *Dr. Meetha.V.Shenoy*

Workshop Conducted by SRCD on Funding Opportunities and Writing Research Proposal



BITS Pilani
Pilani Campus



Workshop on Funding Opportunities and Writing Research Proposal

Venue: Online Mode

9 JULY 2021 | FRIDAY

Opening Remarks and Objectives

Prof. R.N. Saha

Acting Vice Chancellor, BITS Pilani

9:30-9:40 AM



Prof. Sudhirkumar Barai

Director, BITS-Pilani - Pilani Campus

9:30-9:40 AM



Prof. Navneet Gupta

Associate Dean-SRCD, BITS Pilani

Finding an appropriate funding agency for your Research Proposal

9:40 -10:00 AM



Prof. Deepak Chitkara

Department of Pharmacy, BITS Pilani

Getting an Industrial Grant: Process and Approach

11:30-12:00 Noon



Prof. Anil Kumar

Department of Chemistry, BITS Pilani

How to write a successful grant winning proposal

10:00 -10:30 AM



Prof. Anshuman Dalvi

Associate Dean, Faculty Affairs, BITS Pilani

Industry Immersion Programme: Possible collaboration with Industry

12:00 -12:30 PM



Prof. Anil Gaikwad

Department of Pharmacy, BITS Pilani

Preparing a Budget for your research proposal

10:30 -11:00 AM

12:50-1:00 PM

Concluding Remarks

Organized by:

Sponsored
Research and
Consultancy
Division, BITS-Pilani
Pilani Campus, Rajasthan



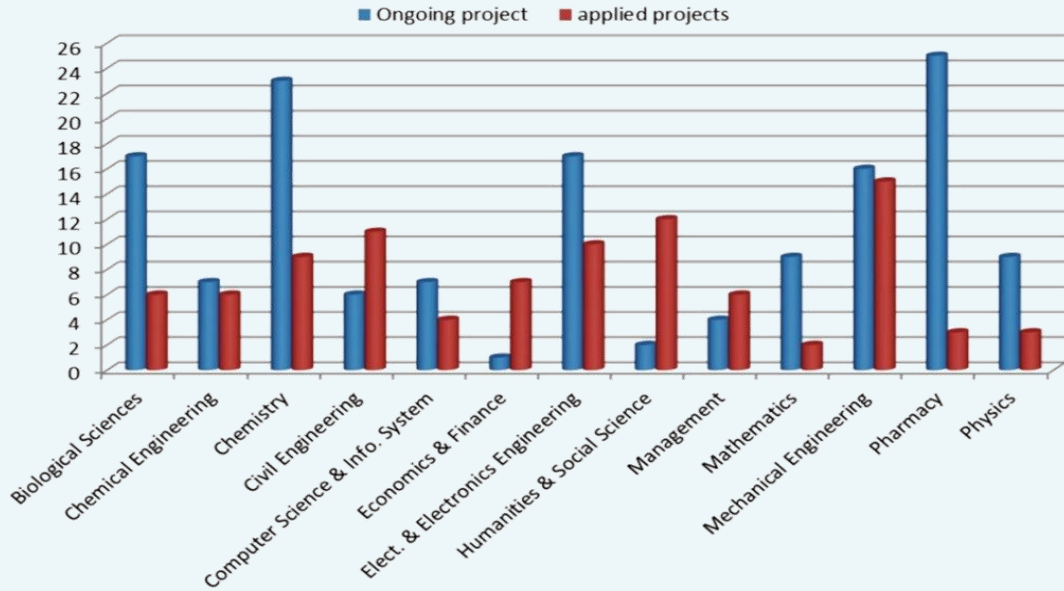
Convener: Prof. Navneet Gupta,
Associate Dean-SRCD



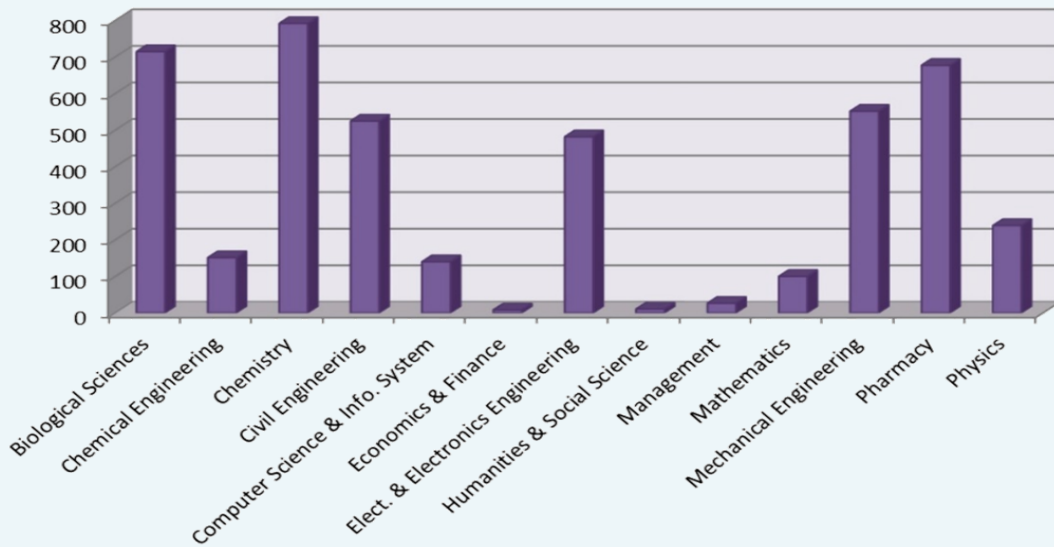
You can access videos of the workshop on SRCD webpage

Link of the videos is <https://sites.google.com/pilani.bits-pilani.ac.in/srcd-video/home>

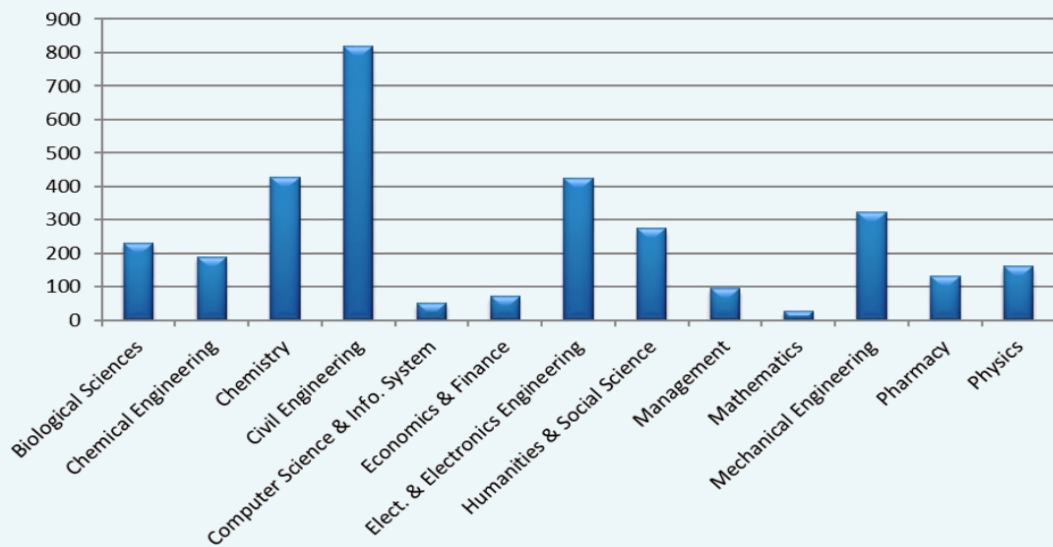
Department wise Ongoing & Applied Projects



Department wise Sanctioned amount (in lakhs) for ongoing projects



Department wise Proposed amount (in lakhs) for Applied projects



Patents Granted

Patentee : The Registrar, Birla Institute of Technology Science

Department: *Department of Mechanical Engineering*

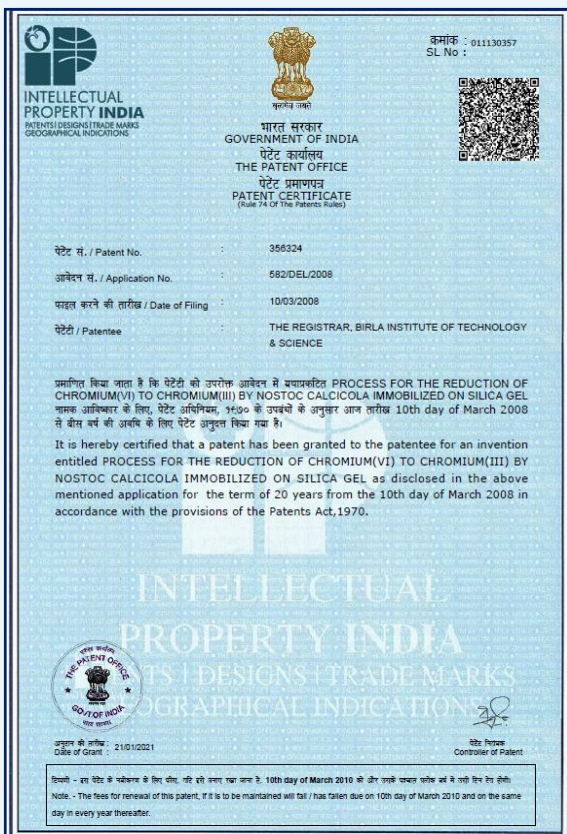
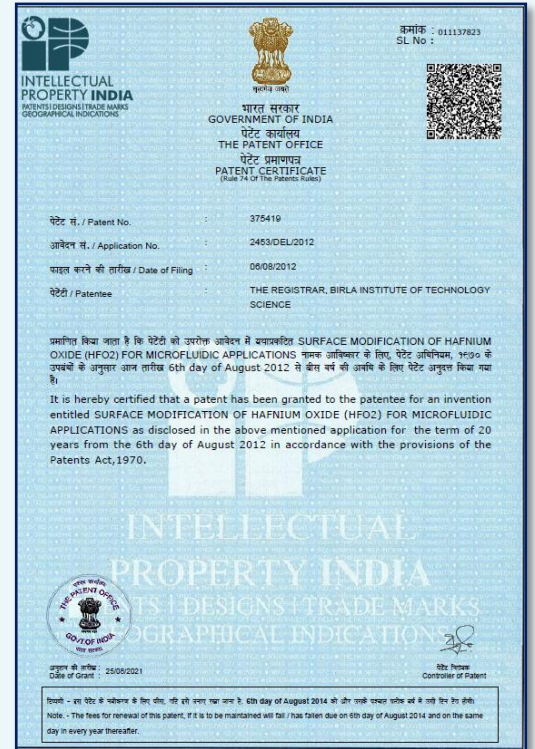
Patent No. : 375419

Application No. : 2453/DEL/2012

Date of Filing : 06/08/2012

Title: *Surface Modification of Hafnium Oxide for Microfluidic Applications*

Date of Grant: August 25, 2021



Patentee : The Registrar, Birla Institute of Technology Science

Department: *Department of Biological Sciences*

Patent No. : 356324

Application No. : 582/DEL/2008

Date of Filing : 10/03/2008

Title: *Process for the Reduction of Chromium (vi) to Chromium (iii) by nostoc calcicola immobilized on silica gel*

Date of Grant: January 21,2021

Useful links of SRCD

Link to apply for New Project Proposal to External Funding Agencies

<https://forms.gle/t7Ks7HLpofSAx7Pt8>

Link to take Administrative Approval for procurement (Equipment, Consumables Etc.)

<https://ipcservices.bits-pilani.ac.in/BAS/>



Address for correspondence:

**Associate Dean
Sponsored Research & Consultancy Division**

Room No. 2146-E, FD-II

Ph: +91-1596-255383

Email: associate.dean.srcd@pilani.bits-pilani.ac.in

Home Page: <https://www.bits-pilani.ac.in/pilani/srcd/home>