News and Blogs

Research Grants and Assistance in Mechanical/Materials Engineering

Prime Minister's Fellowship for Doctoral Research

Prime Minister's Fellowship for Doctoral Research scheme is a prestigious initiative of SERB towards the advancement of university research engagements in line with industry requirement. This scheme is aimed at encouraging young, talented, enthusiastic, and result-oriented scholars to take up industry-relevant research by partnering with institutions of academic excellence. The intent was to leverage research with industry's innovative capacity by providing access to know-how and facilities. These are critical in advancing expertise and technologies leading to tangible economic outcomes like patents, licenses, non-patented and non-licensed new products, and processes.

Under this scheme, fulltime PhD scholars get **double the JRF/SRF fellowship amount, as scholarship**. The scheme has the provision to award up to 100 new scholarships every year. As per the provisions of the scheme, the scholarship is given for a maximum period of four years. While one-half of this scholarship comes from the government, the second half comes from a partner company which also works closely with the candidate on the research project. The first batch of fellowship commenced in 2013. Since then, more than 300 fellowships have been awarded. Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce & Industry (FICCI) on behalf of SERB implement the scheme.

The scheme is open-ended and applications can be submitted anytime within 14 months from their PhD registration, through the portal www.primeministerfellowshipscheme.in or www.serbficci-iirrada.in.

Aim :

● To encourage and inspire promising young Indian Ph.D researchers to pursue industry relevant research in the areas of Science, Technology, Engineering, Agriculture & Medicine.

● To build industry academia partnership for advancing R&D.

● To boost research on industrially relevant subject areas.

Key Features of the Fellowship :

In addition to attractive scholarship, the Prime Minister's Fellowship emphasises on providing a unique and invigorating experience to selected fellows. It ensures best national and international exposure for them and provides mentoring through industry and academic experts through the mechanism of annual review meetings. In addition, periodically mentorship sessions are also organised with the help of expert external agencies.

Eligibility :

1. The applicant should be a full-time PhD scholar in any recognized Indian university / institute / research laboratory. The scholar's PhD registration date should not be more than 14 months from the date of submission of application.

2. The applicant should have a valid industry partner who should be ready to support the research project financially as well as provide guidance and mentorship.

3. The mutually agreed topic of research, between the applicant and the supporting company, should be innovative, have practical relevance and industrial application.

4. The selected applicant should be willing to work with / in the supporting company as and when

required during the project period.

5. The applicant should not draw any other fellowship after the selection.

Selection Parameters :
1. The projects should be innovative and of high scientific merit; with discrete R&D as opposed to exploratory investigation.

2. The proposed research project should have a high commercialisation potential.

3. The applicant, the academic guide and the industry mentor should have strong track record.

How to Apply :
1. ● Register as a student on the portal or www.primeministerfellowshipscheme.in or www.serbficci-iirrada.in. The application form should be prepared according to the guidelines and submitted online through the website as mentioned below:-

● www.primeministerfellowshipscheme.in (CII co-ordinating industry chambers) or

● www.serbficci-iirrada.in(FICCI co-ordinating industry chambers)

2. Download the Call for Proposal and Document Checklist

3. Tie up with a company and get the required undertakings signed from a valid signatory in the company as well as in the host institute

4. Collect all documents and make digital copies of each

5. Fill the application form online (the form cannot be downloaded and requires net connectivity while filling)

6. Submit application

7. Do not send any physical copy of the application / documents to CII / FICCI

For more information on Prime Minister's Fellowship for Doctoral Research scheme, kindly visit www.primeministerfellowshipscheme.in or www.serbficci-iirrada.in

About Mission for Advancement in High-impact Areas (MAHA) Scheme, ANRF:
ANRF, a statutory body of the Government of India, has been established to provide high level strategic direction for research, innovation and entrepreneurship in fields of natural sciences and scientific and technological interfaces of humanities & social sciences to promote, monitor and provide support as required as per recommendations of the National Education Policy.

Mission for Advancement in High-impact Areas (MAHA) is a program under ANRF to support priority-centric, solution-based research in Mission mode focussing at some key areas in alignment with nations prime requirements. It is envisaged to be multi-disciplinary, multi-institutional and multi-investigator projects with industrial partnerships in the best sorted areas of immediate concern. ANRF had identified 2D Innovation Hub to demonstrate the interdisciplinary 2D materials-based innovations with a clear pathway towards establishment of R&D Ecosystem to enable translation, commercialization and deployment of technologies for nations need. The objectives of the 2D Innovation Hub are to establish an ecosystem for conducting R&D in 2D materials-based technologies for electronic applications. The hub seeks to design and develop indigenous 2D materials-based technologies, prototypes, devices,

components, products, sub-systems, and systems for a wide range of applications. It also emphasizes capacity building and intellectual property generation. Furthermore, the hub is committed to supporting startups and fostering entrepreneurship by providing mentorship, incubation, and access to resources. Finally, it aims to propose a governance structure and a strategy to ensure long-term self-sustainability.

About R&D Scheme, MeitY:

The Ministry of Electronics and Information Technology (MeitY), a central ministry of the Government of India, is a stand-alone ministerial agency, responsible for formulating and implementing national policies and programs aimed at enabling the continuous development of the electronics and IT industry. MeitY focuses on human resource development and promotes R&D and innovation in electronics and IT with a strong emphasis on emerging sectors. R&D Scheme at MeitY supports academia, R&D organizations, start-ups/ MSMEs, and domestic companies & multinationals; with a long-term roadmap to push the boundaries of current knowledge to create new innovations, solutions, know-how of various processes technologies, IPs, Systems and products and ensure advancements to benefit societies, industries, and economies at large.

1. Aim and Objectives of 2D Innovation Hub:

1.1 Aim :

To foster and nurture scientific and industrial R&D in 2D materials-based technologies, establishing an innovative ecosystem in India that drives research and development, commercialization, and deployment of indigenous technologies for various application/sectors.

1.2 Objectives :

1.To establish an ecosystem to carry out R&D in 2D materials-based technologies for electronics applications.

2. To design and develop indigenous 2D materials-based technologies/prototypes/devices/components/products/sub-systems/systems for a wide range of applications.

3. Capacity building and IP generation.

4. To support startups and foster entrepreneurship by providing mentorship, incubation, and access.

5. To propose a governance structure and a strategy to make the hub self-sustainable.

2. Focus Areas under 2D Innovation Hub:

The proposals shall focus on at least 2 (and preferably more) out of the following sectors identified below (for the development of electronic devices/products/systems). Other areas may also be proposed with proper justification:

i. Sensors for various sectors

ii. Emerging Electronics-based Devices (Beyond Si Nanoelectronics, 2D Microprocessor Chip, etc.)

iii. Optoelectronics Devices (Next Gen LED, Photodetectors, etc.)

iv. Memory Devices

v. 2D Memristor and Neuromorphic Devices

vi. Quantum Technologies-based Devices (Qubits & SPDs/SPEs, etc.)

vii. Co-integration with established technologies such as CMOS, FinFET, etc.

viii. Challenges specific to Strategic Sector (EMI Shield, Flexible Electronics, etc.)

The number of sectors/verticals for which credible and viable proposals are submitted will be given due weightage in the evaluation of the proposals.

3. Duration and Eligibility Criteria

3.1 Duration
The duration of the project may be maximum up to 5 years based on the complexity and nature of the project. However, a further plan for sustainability of the hub/deployment of the developed technologies needs to be included.

3.2 Eligibility Criteria
3.2.1 For Academia/R&D Organizations
i. Applicants [Lead Principal Investigator (LPI) and Principal Investigator(s) (PI(s))] should be Indian citizens. Foreign nationals (including OCI and NRI) are also eligible to apply provided they fulfil the eligibility criteria by ANRF.

ii.The applicant(s) must hold a regular academic/research position in a recognized Government/Private academic institution/national laboratory/any other recognized R&D institution in India with proven track record in the relevant domain.

i. Private academic institutions with valid UGC/AICTE/PCI approval, Private R&D organizations with valid DSIR-SIRO recognition, and voluntary/non-governmental organizations registered under NITI-AAYOG Darpan portal are only eligible.

ii. LPI and PI(s) should have at least 5 years of service remaining at the time of submission of the proposal.

iii. Proposals involving multiple institutions with some prior R&D infrastructure and expertise in the relevant domain will be given preference.

iv. A pre-identified dedicated site for establishing a single-location 2D Innovation Hub needs to be proposed.

3.2.2 Criteria for Industry Participating as Funding Agency
Companies/LLPs engaged/interested in R&D including startups (as per the DPIIT notification dated 19th February 2019 or extant norms), MSMEs (as per the Gazette Notification by the Ministry of Micro, Small and Medium Enterprises, dated 1st June 2020 or extant norms), and Indian companies/LLPs which are incorporated in India under the Companies Act, 2013/the Limited Liability Act, 2008 and the Companies/LLPs having foreign investment in strict compliance with the Consolidated FDI Policy of 2020 or extant norms are eligible to partner with IA as a funding agency.

3.3 IPR Ownership
The intellectual property rights (IPR) of the technologies developed will remain with the IAs, while the funding industry will hold the first right of refusal.

4. Expected Deliverables of the Proposal

The proposal may clearly define year-wise deliverables (Key Performance Indicators (KPI)) such as Patents, Technologies, Prototypes, Transfer of Technologies (ToTs), Devices, Start-up incubation, etc., along with a commercialization strategy.

The proposal should include:

i. At least 2 market-ready products (preferably more) as per user requirement by the end of the project. Purely software-based products will not be considered. The complete value chain for the identified products/technology (design, development, testing, packaging, etc.) must be covered.

ii. Tangible technologies with high TRL >7.

iii. Number of good quality IPs (not less than 10 IPs, preferably more). (The IPR norms will be as per ANRF and MeitY guidelines.)

iv. Number of ToTs (not less than 5 ToTs, preferably more).

v. Total number of startups:

a. To be incubated (minimum 3, preferably more).

b. To be mentored (minimum 10 startups, preferably more).

c. That can access the facilities in a reasonable & transparent manner.

vi. Short-term, mid-term, and long-term milestones and deliverables.

i. Plan for technology exploitation and market readiness.

ii. Skilled manpower development.

5. Roles & Responsibilities of 2D Innovation Hub and Spokes
Only one hub is to be supported under the Call with multiple Spokes and Spikes. The roles and responsibilities are as follows:

5.1 Roles and Responsibilities of the Hub
Some of the roles and responsibilities of the Hub (not limiting to) are as follows:
i. Establishment of R&D ecosystem as a Section-8 company to be accessed by academia and industry for translational R&D.

ii. Registration of the Section-8 company under the Companies Act, 2013.

iii. Constitution of Advisory Committee/Governance Structure for the Section-8 company and Review Committee for execution of Innovation Hub activities.

iv. Identification of Spokes and engagement with the Spokes with respect to technical and financial monitoring.

v. The Hub will be responsible for technology development and delivering tangible outcomes committed under the proposal in terms of KPIs.

vi. Generation of skilled manpower through exchange programmes, training workshops, seminars, and hands-on training.

vii. Startup incubation and startup support.

viii. Development and launch of a national web portal for the 2D Innovation Hub.

ix. Conduct grand challenges and hackathons.

x. Benchmarking, developing market-ready products, and market outreach for the proposed technologies.

xi. Identify a governance structure and a sustainability plan for the post-project period.

xii. Develop a national 2D materials database (material design, simulation platforms, SoP, etc.)

xiii. Provision for engaging deep-tech startup accelerators for seed funding, IP-sharing norms, and connections to VCs/angel investors.

xiv. Develop a long-term sustainability and business model including industry subscription models, revenue-sharing from IP/ToT, service-based facility access to start-ups/users, or public–private partnerships beyond the grant period.

5.2 Roles and Responsibilities of the Spoke / Spike
Some of the roles and responsibilities of the Spoke/Spike (not limiting to) are as follows:
i. To carry out R&D aligned with the technology roadmap of the Hub as per the proposed innovation outcomes.

ii. Each identified Spoke may focus on one specific material or technology.

iii. Generation of skilled manpower through exchange programmes, training workshops, seminars, and hands-on training.

5.3 Roles and Responsibilities of the Industry Partner(s)
Some of the roles and responsibilities of the industry partners (not limiting to) are as follows:
i. Handhold/co-develop the solution in collaboration with the Hub/Spokes/Spikes.

ii. Provide a test bed for field trials/clinical trials, if available.

iii. Conduct market study.

iv. Provide the requirement/specifications for any identified technology/solution based on 2D materials.

v. Carry forward the technology know-how by setting up pilot production/manufacturing lines.

6. General Conditions and Guidelines
i. Project proposals with multiple PIs from other academic institutions/R&D organizations are invited in consortium mode.

ii. 2D Innovation Hub is required to be led by experts with proven track record in related areas and working in regular positions in recognized academic institutions or public-funded R&D organizations. The LPI should identify the Innovation Hub partners (from same or other partnering institutions), define their roles and responsibilities, and work toward project objectives. Post selection, funds will be allocated to the LPI or nodal implementing agency for distribution to other partners. Industry is not eligible to submit proposals as LPI.

iii. Participation of industries/PSUs/start-ups is mandatory with matching contribution (preferably in cash). The industry partner is expected to provide funding in cash (preferred) or in-kind (e.g., R&D facilities, test

beds, systems for testing and validation) for successful execution of the project.

iv. In a 2D Innovation Hub, a minimum of 3 PIs (preferably more) shall be involved from the same institution with clearly defined roles, responsibilities, and justifications. Funds will be transferred to the Hub only. Funding may be proposed for PIs participating from other institutions (excluding capital head).

v. The research grant is provided to the Hub under the capital head of ANRF and under the GIA head of MeitY for equipment, software, license fees, plant cost/fabrication systems/demonstration models, and under general head for personnel, consumables, travel, contingency, and other costs. The "Overhead" will be as per the ANRF-OM dated Oct 14, 2024. No capital budget is provided for Spoke proposals. If required, it may be considered by the competent authority with justification.

vi. Priority will be given to research proposals that lead to development of technologies and products capable of commercialization at the industry level. Clear pathways to global IP generation and technology transfer should be provided.

vii. ANRF and MeitY may suggest restructuring or reorganization of the consortia based on area of work, merits, and technology requirements. Revised proposals may be requested accordingly.

i. An expert committee needs to be constituted for monitoring and smooth functioning of the 2D Innovation Hub with one representative each from ANRF and MeitY.

ii. IPR sharing for Hub, Spokes, Spikes, and participating industry needs to be clearly defined. Non-exclusive rights to the industry partner will be preferred; however, the first right of refusal may remain with the industry partner.

iii. Commercial exploitation of the IP created under the project shall ensure that revenue, profits, or royalty are received by the approved applicant in India and are subject to tax in India per applicable laws.

iv. Exclusionary clause: Approved applicants that receive incentives, benefits, or support under the scheme shall retain ownership of the Intellectual Property (IP) created or developed under the project.

v. Definition: "Intellectual Property Rights" include any copyright and related rights, patents, registered designs, database rights, design rights, topography rights, trademarks, service marks, trade names, domain names, trade secrets, unpatented know-how, and all similar or equivalent rights, including renewals, extensions, or applications thereof.

vi. The proposal should focus on the development of electronic devices, products, or systems.

vii. Submission of a Memorandum of Association (MoA) from the industry/user/other stakeholders will be preferred along with the proposal.

viii. One or more industries can contribute to the project. Active engagement of the industry in R&D will be preferred.

Note: It is strongly recommended that the LPI identify the industry and secure their commitment in principle before submitting the proposal. A broad framework of active collaboration among consortia members (LPI, PI, Spokes, etc.) should be included in the proposal. PIs should focus on industry-oriented problems, with clear deliverables and targets, and specify the industrys scientific role in achieving objectives.

7. Evaluation and Mode of Selection

7.1 Evaluation:

A joint expert group called as **Innovation Hub Advisory Committee (IHAC)** constituted by ANRF and MeitY would consider the proposals for feasibility and carry out technical and financial evaluations for the recommendation for financial support.

Selection will be based on:

i. Scientific and technical merit of the LPIs and PIs.

ii. Capability of the Academic Institute/R&D organization, including existing infrastructure and prior work in the area.

iii. Innovation potential

iv. Commercialization prospects

v. Role of Industry/ Start-up

vi. Alignment with national priorities

vii. Sustainability plan beyond the project tenure

A concise concept note (as per a prescribed format) should be submitted in addition to the full proposal (along with all requisite documents) before the deadline. The proposals will be reviewed at two levels:

i. Level A: Concept notes will be screened at this stage and only the full proposals of the short-listed Concept notes will be reviewed further.

ii. Level B: The shortlisted full proposals will be subjected to rigorous assessment with the help of subject matter experts. If required, the LPI and PIs of the full proposals that clear the review process, may be invited for a discussion/presentation.

IHAC will recommend the proposals, and the **Executive Committee (EC)** of ANRF and MeitY will give the final approval.

8. Mode of Submission of Proposal

i. LPI is eligible to apply for only one proposal during a call.

ii. Only one proposal to be submitted from one implementing agency as LPI.

iii. The Call for applications will be notified through the "online portal" of ANRF website www.anrfonline.in.

iv. The proposals under 2D Innovation Hub should be submitted only through online portal of ANRF. The proposals submitted in any other mode/platform will not be considered by ANRF.

9. Guidelines for Online Application Submission

For successful online submission of the application, the following points may be noted:
i. LPI and PI(s) should first register on official website

ii. After log-in, applicant(s) are required to fill all the mandatory fields in Profile Detail section.

iii. Some of the key elements of the proposal should be defined clearly such as Project Title (max 500 characters), Project summary (max 3000 characters), Keywords (max 6), Objectives of project (max 1500 characters), Target values being set for the Projects, Expected output and outcome of the proposal (max 1500 characters).

iv. Other Technical Details (OTD) of the proposal has to be uploaded as a single file in PDF format.

10. Documents Checklist

i. Document 1: Performa (LPI)

ii. Document 2: Performa (PIs)

iii. Document 3: Endorsement from LPI and PIs.

iv. Document 4: Certificate from Lead Principal Investigator (LPI) and Principal Investigator(s) (PIs).

v. Document 5: Concept Note.

vi. Document 6: Plagiarism Declaration.

vii. Document 7: Other Technical Details.

viii. Document 8: Full Proposal.