



ISRO-UoP SPACE TECHNOLOGY CELL
UNIVERSITY OF PUNE

M C UTTAM
Hon. Director
ISRO Visiting Scientist

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Date: 11-06-2010

Sub: Invitation for New Research Proposals under UoP-ISRO Interaction programme for the year 2010-11

Under ISRO-UoP Interaction programme, financial support is provided for research proposals in areas of interest to ISRO and originating from University of Pune and its affiliated colleges. Thrust areas currently identified under the above programme are given below:

- Origin of life
- Space Radiation
- Wind measurements and modeling
- Optical coatings and sensors
- Rural development and developmental communication
- Geo-informatics
- Remote sensing applications
- Material Sciences
- Biodiversity
- Instrumentation
- Image processing

In addition, research proposals related to launch vehicle technology, satellite technology, ground based systems and space sciences are also supported. Annexure-1 gives a list of broad areas of interest to ISRO in addition to the above identified thrust areas. Research proposals in these areas are invited from academic circle of University of Pune and its affiliated colleges. A list of research projects undertaken during the last three years under this scheme is given in Annexure-2 for guidance. Procedure for final selection of the research proposals involves evaluation at 2-3 stages and Investigators are expected to

provide necessary clarifications. As a first step, research proposals received in response to this invitation will be scrutinized by Preliminary Evaluation Committee (PEC), a committee consisting of Members from the University and suggestions to modify if required, will be made to the Investigators. These proposals are then assessed by the Programme Management Committee (PMC) where Investigators are required to make a presentation and clarify the points raised by the Members. Committee's recommendation goes to Joint Policy Committee (JPC) chaired by Hon'able Vice Chancellor where final acceptance/non-acceptance of the research proposal is given. Once Project gets started, Investigator is expected to provide periodical progress report highlighting the technical achievements and difficulties if any. Expenditure statement in regard to funds released is to be regularly submitted and unspent money if any, is to be returned. Release of funds for the subsequent period will depend upon the expenditure status and submission of progress reports. While assessing the new proposals, PMC takes into account the past performance of the Investigators who have under this scheme either completed or are having an on-going project with them. Timely submission of the progress reports, expenditure status, minimum unspent money, completion of the research project as per the schedule and submission of a comprehensive final technical report etc are the factors for determining past performance.

You may kindly bring the above facts to the notice of all your colleagues in the Department and motivate them to submit the research proposals in the above areas. Proposal in the enclosed format (Annexure-3) along with a soft copy may be submitted by the prospective Investigators to this Office on or before 16th August 2010. For any further clarification, they may contact the undersigned. Your cooperation and support is solicited to make the programme meaningful and a success.

(MC Uttam)

Encl: aa

To Heads of Departments
University of Pune
Pune

Cc Chairman, JPC/Vice Chancellor, UoP
Scientific Secretary, ISRO Hq Bangalore

Broad areas of interest to ISRO

- Application of GPS
- Image processing for nondestructive testing
- Optical fibre communication
- Optical communication
- Embedded systems development for Data Collection Platform
- Modeling, design and development of SMART structures through active control
- Vibration isolators based on natural and synthetic rubbers
- Elastomers for cryotemperature applications
- Synthesis of new energetic chemical like ADN(Ammonium Dinitramide), HNF(Hydrazenium Nitroformate) and GAP(Glycidyl Azyl Polymer)
- Eco friendly propellants
- Conducting polymers for NLO application
- Holographic NDT studies
- Theoretical and experimental investigation in glass and Kevlar fiber composites
- Oxide dispersion strengthened super alloys for use in gas turbine engines
- Oxide dispersion strengthened copper alloys for use in combustion chamber
- Tough ceramics
- Oxidation protection for carbon-carbon composites
- Nanostructure based dielectric materials for filters and oscillators
- Nanocrystalline ceramics for re-entry and reusable space vehicles
- Al-Li alloy for cryo engine propellant tanks

List of the Research Projects undertaken in the last three years

- | S No. | Title of research project |
|--------------|---|
| 1. | Exploring semiconductor quantum dots for solar cell applications (Project no.79) |
| 2. | Biodiversity assessment of tropical midges using geo-biological parameters and remote sensing techniques (Project no.80) |
| 3. | Design and development of a thermal gradient diffusion chamber for measurement of ice nuclei in the atmosphere (Project no.81) |
| 4. | Application of RS and GIS techniques to evaluate effects of landuse – landcover on ravination along Pravara Basin, Maharashtra (Project no.82) |
| 5. | Reconstruction of late quaternary fluvio-sedimentary response of Kaveri and Palar Rivers: Based on chronostratigraphy, digital geomorphometry and remote sensing analysis (Project no.83) |
| 6. | Design, development, characterization, analysis and fabrication of Hydrogen Leak Sensors (Project no.84) |
| 7. | Preparation of micro crystalline powders of $ZnNb_2O_6$, $ZnTa_2O_6$, $MgNb_2O_6$, $MgTa_2O_6$, $ZnTaO_3$, $MgTaO_3$ for microwave dielectric applications (Project no.85) |
| 8. | A study of geomorphic characteristics and structural elements in select seismically active regions of India; with the help of remote sensing techniques (Project no.86) |
| 9. | Development and analysis of MOS device with embedded nanocrystals of silicon dioxide layer for enhancement in charge transfer rate (Project no.87) |
| 10. | Synthesis and characterization of composite of single walled carbon nanotubes with Ag by electrochemical methods (Project no.88) |
| 11. | Simulating urban growth using GIS & RS - a case study of Pune city, India (Project no.89) |
| 12. | Synthesis of ZnS thin film by modified spray pyrolysis method and study of its physical properties for optical sensor and solar cell applications (Project no.90) |
| 13. | Feasibility study of tailoring diluted magnetic semiconductor (DMS) materials with transition temperature (T_c) around room temperature (Project no.91) |
| 14. | Biodiversity and Gravitational studies of Rotifer Fauna from few freshwater bodies around Pune, Maharashtra (Project no.92) |
| 15. | Autonomous navigation system for low earth orbit (LEO) satellite using global navigation satellite system (GNSS) (Project no.93) |
| 16. | Study of temporal and spacial distribution of seaweeds for their sustainable utilization using ground based and satellite borne systems (Project no.94) |
| 17. | Design and simulation of satellite-borne high resolution interferometric measurement monsoon rain (SHIMMER) (Project no.95) |
| 18. | Gas sensing applications of metallophthalocyanines (Project no.96) |
| 19. | Synthesis of undoped and Cd, Al, In, B doped nanostructures of ZnO by intermittent chemical spray pyrolysis for optoelectronic and gas sensing applications (Project no.97) |
| 20. | Conservation and mapping of health promoting endangered plant species from northern |

- Western Ghats of India (Project no.98)
21. Studies on preparation and photocatalytic applications of nanocrystalline TiO₂ and its nanocomposites (Project no.99)
 22. Development and characterization of thin film solid electrolyte cells as voltage source, temperature, pressure and gas sensor (Project no.100)
 23. Photographic observations of meteor showers (Project no.101)
 24. Design, development and realization of gasifier cookstoves (Project no.102)
 25. Developing an environmental magnetic model for assessment of the anthropogenic particulate loading in the urban environments : a case study from the Pune Metropolitan region, Maharashtra (Project no.103)
 26. Application of remotely sensed data for the evaluation of impervious surface growth and its effect on surface runoff in two rapidly urbanizing watersheds of Western Maharashtra, India (Project no.104)
 27. Biodiversity of Zooplankton, Phytoplankton and Molluscs in relation to physico-chemical characteristics of water reservoir of Ambhore Dam (District Ahmednagar) and Manas Lake Reservoir (District Pune) (Project no.105)
 28. Chemical deposition of layered transition metal chalcogenides to study their tribological properties (Project no.106)
 29. Synthesis and applications of composites of TiO₂ with Carbon Nanotubes and metal Chalcogenides (Project no.107)
 30. Chemical Deposition of CuInSe₂, CdS and ZnO thin films for solar cell applications (Project no. 108)
 31. Use of a geographical information system to study tuberculosis epidemiology and the factors affecting case detection in a rural population in Pune district, Maharashtra (Project no. 109)
 32. A comparative study of telecommunication technology: its impact and relevance on urban, rural and tribal community of Maharashtra (Project no. 110)
 33. Study of invertebrate biodiversity of Swanga Lake region, Dist Amravati, Maharashtra (Project no. 111)
 34. Impact of radiations on the food quality and shelf life of food for space mission (Project no. 112)
 35. Study of the direct radiative forcing of atmospheric aerosols over different environments (Project no. 113)

ISRO Proposal Format

Application for grant of funds

1. Application Institution
2. Title of the Research Proposal
3. Name of the Principal Investigator
4. Name(s) of other investigator(s) with the name(s) of their Institution
5. Proposed duration of Research Project
6. Amount of grant requested (in Rs.)

	1st Year	2nd Year	3rd Year	Total
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Staff				
Equipment and Supplies				
Others				
Total				

7.
 - a) Bio-data of all the Investigators (Format-A).
 - b) Brief description of the Research Proposal with details of budget (Format-B).
 - c) Declaration (Format-C).

8. I/We have carefully read the terms and conditions for ISRO Research Grants and agree to abide by them. It is certified that if the research proposal is approved for financial support by ISRO, all basic facilities including administrative support available at our Institution and needed to execute the project will be extended to the Principal Investigator and other Investigators.

Name	Institution	Designation
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Principal Investigator		
Co-Investigator(s)		
Head of the Department/Area		
Head of the Institution		

Format A

Bio-data of the Investigator(s)*

1. Name

2. Age DD/MM/YY

3. Designation

4. Degrees conferred (begin with Bachelor's degree):

Degree	Institution conferring the degree	Field(s)	year
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5. Research/training experience (in chronological order):

Duration	Institution	Name of work done
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6. Major scientific fields of Interest

7. List of publications:

* Bio-data for all the investigators should be given, each on a separate sheet.

Format B

Proposal Preparation Format

1. Title of the research proposal
 2. Summary of the proposed research
(A Simple concise statement about investigation, its conduct and anticipated results in no more than 200 words)
 3. Objectives
(A brief definition of the objectives and their scientific, technical and techno-economic importance)
 4. Major Scientific fields of Interest
(A brief history and basis for the proposal and a demonstration of the need for such an investigation preferably with reference to the possible application of the results to ISRO's activities. A reference should also be made to the latest work being carried out in the field and the present state-of-art of the subject).
 5. Approach:
(A clear description of the concepts to be used in the investigation should be given. Details of the method and procedures for carrying out the investigation with necessary instrumentation and expected time schedules should be included. All supporting studies necessary for the investigation should be identified. The necessary information of any collaborative arrangement, if existing with other investigators for such studies, should be furnished. The Principal Investigator is expected to have worked out his collaborative arrangement himself. For the development of balloon, rocket and satellite-borne payloads it will be necessary to provide relevant details of their design. ISRO should also be informed whether the Institution has adequate facilities for such payload development or will be dependent on ISRO or some other Institution for this purpose.)
 6. Data reduction and analysis:
(A brief description of the data reduction and analysis plan should be included. If any assistance is required form ISRO for data reduction purposes, it should be indicated clearly.)
 7. Available Institutional facilities:
(Facilities such as equipment available at the parent Institution for the proposed investigation should be listed.)
 8. Fund Requirement
(Detailed year wise break-up for the Project budget should be given as follows
- | | | | |
|--|----------|----------|----------|
| | 1st Year | 2nd Year | 3rd Year |
|--|----------|----------|----------|
- 8.1 Salaries:
 - 8.1.1 Research Scientist
 - 8.1.2 Research Associate
 - 8.1.3 Research Fellows

8.1.4 Supporting Technical Staff

8.1.5 Other staff, if any

Total:

(Note: please specify the designation and the rate of salary per month for each category.)

8.2 Equipment

1st Year	2nd Year	3rd Year	Total
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Total:

(Note: Please specify various individual items of equipment and indicate foreign exchange requirement, if any)

8.3 Consumables and Supplies

1st Year	2nd Year	3rd Year	Total
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Total:

(Note: Please specify the items and indicate foreign exchange requirement, if any.)

8.4 Travel

1 st Year	2nd Year	3rd Year	Total
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8.5 Other project costs, if any (give details)

1 st Year	2nd Year	3rd Year	Total
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8.6 Grand Total

Format C

Declaration

I/We hereby agree to abide by the rules and regulations of ISRO research grants and accept to be governed by all the terms and conditions laid down for this purpose.

I/We certify that I/We have not received any grant-in-aid for the same purpose from any other department of the central government/state government/public sector enterprise during the period to which the grant relates.

	Name	Designation	Signature
Principal Investigator			
Head of the Department			
Head of the Institution			

Seal of the Head of the Institution
