Catalysing Indo-French S&T Ecosystem
editor’s note

By definition of dictionary a “catalyst” is any substance used in small proportion, that notably affects the rate of a chemical reaction without itself being changed or consumed. Since the time of its inception in 1987, CEFIPRA has evolved from being a bilateral funding agency to that of a catalyzing agency of Indo-French S&T ecosystem, while retaining its original character. The Centre has capitalized, essentially on the long standing Indo-French S&T relationships which go back to the early 1900s. The sporadic S&T interactions between the scientific communities of the two nations were systematized with the establishment of CEFIPRA.

By supporting more than 450 collaborative projects, CEFIPRA has contributed to the Indo-French S&T landscape through development of around 2600 human resources and mobility of over 2500 scientists and young researchers. The very fact that 140 research organisations/universities of India and 61 such institutions in France are directly or indirectly linked today is because of the efforts made through CEFIPRA, a testimony of its catalytic role in the evolution of vibrant Indo-French S&T ecosystem. CEFIPRA has also strengthened the different components of Indo-French S&T ecosystem in its external environment like the Indo-French joint laboratories, which have been highlighted in this edition. The center is also playing a lead role in the recently initiated Franco-Indian water network.

In our catalytic pursuit, recently we organized a successful Indo-French workshop on Himalayan Tectonics initiating interaction among 12 French and 16 Indian scientists to study the Himalayas from Jammu to Leh.

We congratulate the eight CEFIPRA-ESONN fellows who will be attending the European School on Nanosciences & Nanotechnologies (ESONN) 2014 training programme during August 24 to September 13, 2014 at Grenoble, France.

CORRIGENDUM

The publication year of Joseph E. Stiglitz’s book was mentioned as 1919 instead of 1999 in the editorial of Ensemble’s issue dated May 2014 (Vol. 2/2). The error was inadvertent and is regretted. - Editors
Ground Water: A Critical Resource

At 230 km³ per year, India is the largest consumer of ground water in the world. 80% of domestic and 60% of agriculture/irrigation water demand is met through groundwater. 90% of rural water supply is from groundwater sources. Central Ground Water Board has estimated replenishable ground water resources at 433 BCM. However, its distribution is heavily skewed across the country. A growing demand for water coupled with unreliable public supply schemes has led to a growing dependence on ground water resources. Unsustainable level of exploitation has put the ground water resources at great peril, lowering groundwater table in many areas and causing saline water intrusion in various parts of the country.

While there is a lot of discussion on over exploitation of groundwater resources there is inadequate data on its various dynamics. This is a serious concern. There is an urgent need to do aquifer mapping as well as build a comprehensive data base on groundwater flow systems and ground water availability in each hydro-geological setting.


The centre is running under the patronage of the Director, CSIR-NGRI and governed by the respective administrations of CSIR-NGRI and BRGM. In addition, two bodies viz., Scientific Council and Steering Committee consisting of members from both the countries have also been set-up. These two bodies meet annually in Hyderabad; the Scientific Council reviews the scientific work of the centre as well as suggests new research to be taken by the Centre while the Steering Committee looks after the administrative conduct of the centre and also steer the centre for the future progress.

IFCGR: Fields of Expertise

The expertise available and Tools and Methodologies developed at the Centre are:

- **Geological Investigations**: Geology of crystalline rocks, analysis of intrusive structures, Geological mapping including Hard Rock weathering thickness mapping, Soil gases studies viz., Radon emanometry
- **Hydrogeology**: Water level analysis, Hydraulic tests including aquifer pumping tests and innovative test analysis and new tools suitable for hard rock aquifers.
- **Geophysics**: Magnetic Resonance sounding (MRS), Electrical Tomography including SP, Borehole Geophysics, Magnetic & Electromagnetic Survey and interpretation including VLF, etc. and Mise-a-la-Masse investigation.
- **Geostatistics**: Various Krigging methods for parameter estimation at unmeasured location and application of Theory of Regionalized variables in Groundwater Monitoring network design. Groundwater sampling and groundwater quality monitoring
- **Aquifer modeling**: for flow and mass transport in various aquifer systems for prediction and management of groundwater with MODFLOW FLEX as well as MARTHE.
- **Decision Support Tool (DST)** for groundwater resource management in Hard Rock aquifers.
- **Heliborne Transient Electromagnetic Survey acquiring high density data and their interpretation.**
- **Groundwater Quality analyses**, interpretation and remediation.
- **Ensemble | July 2014**

**ICFGR: Major Achievements**

The Centre has taken up a small watershed in the Maheshwaram Mandal of Ranga Reddy District of erstwhile Andhra Pradesh after considering a number of scientific and logistic parameters for its study area in collaboration with the Andhra Pradesh State Groundwater Department. So far a large amount of basic data has been gathered, the aquifer system has been conceptualised and a number of experiments have been carried out to determine the aquifer parameters (groundwater flow and storing properties). Various experiments have provided knowledge on the variability of the properties of the system.

Global water balances are prepared for many years including the years of weak and good monsoons. It has now been proved that only Artificial Recharge is not a sustainable solution rather a combination of Artificial Recharge and changing cropping pattern would solve the problem in a sustainable way. Some important results are summarized below in brief.

**Geological Modelling**: The aquifers in hard rock terrains consist of two distinct zones viz., weathered and fractured/fissured zones with very different physical properties. The research at IFCGR initially used geological and geophysical methods to thoroughly investigate and conceptualize the system and characterize its flow and storage properties through specialized methods. IFCGR has developed a new geological model to explain the weathering in such a terrain. The flow in the coupled system was simulated through a numerical model as two consecutive layered system i.e., weathered layer as porous medium and the fractured zone as equivalent porous medium without any aquiclude in between them. The aquifer model was calibrated and it showed that the water balance declines by 1.2 metres every year.

**Optimal Monitoring Network Design**: Monitoring the groundwater parameters requires drilling the borewells at a high cost but at the same time the data is essential for any meaningful study. The geostatistical methods could provide the usefulness of a new data collection point before its collection and this reduces the cost of establishing redundant wells. A new procedure developed using the geostatistical techniques to optimize the number of wells to be monitored, has been applied to optimize the monitoring network for water level and Fluoride content in the study area facilitating fast and cost-effective monitoring.

**Specialized Artificial Recharge Experiment Using Defunct Dug-Wells**: Water conservation is a must as the demand outstrips natural availability of the water resources in hard rock and semi-arid regions. IFCGR has developed the technique of water conservation to artificially recharge the aquifer through defunct dug wells. This is almost a no-cost technique that could easily be adopted in the rural areas. It captures the rain water making it fall into a trench connected to a pit of 2-3 meter depth that allows the water to fall down after silt removal into a selected dug-well using the natural slope. This method has a large number of applications in semi-arid regions.
The Centre was represented in many International conferences in various capacities in India and abroad including the 150th Anniversary of Darcy’s Law in Dijon, France. The members of IFCGR have served as members of many scientific committees including Dr. Ahmed as Associate Editor of the Hydrogeology Journal.

The research output of the Centre has been reported through a number of research papers (more than 60) published in SCI journals including the best journals of the subject, Water Resources Research and Journal of Hydrology.

Books Edited:

A number of bore-wells drilled in the project have been handed over to the farmers in whose lands they were drilled as a societal agenda and the EHP has come to rescue of the local public for their drinking water supply during the drought situation for a couple of years. The users can also work out the outcomes under the revised water balance, producing the water table and the policy makers to decide any possible scenario in the given scenario. This model allows both the farmers and the decision maker to choose the best scenario that ensures the sustainability with their satisfaction. An analysis is being developed to calculate even the income associated with various scenarios to make this further attractive and useful.

International Experimental Hydrogeological Park (EHP) is a technical laboratory for detailed investigations on water resources in the arid and semi-arid regions. To avoid its scarcity due to over-exploitation and mismanagement people need to be made more aware. The concept of groundwater cycle is hardly known to the common people. Complex nature of hard rock aquifers only makes things more complicated. We believe that 50% of the problems can be averted or solved through correct understanding of the system and cooperative action. It is perhaps time that this subject is included in the school curriculum. Therefore it is proposed to create an experimental site devoted to the study of hard rock aquifers at local scale.

The idea is to offer an adequate facility for detailed investigations of the hard rock aquifers through a large number of piezometers and borewells at different depths. This experimental park shall then be accessible to both Indian and International scientists working in the field of hard-rock hydrogeology who want to test new methodologies, calibrate methods, exchange ideas and field techniques on the best experimental site ever made. The Centre was working in many International conferences in various capacities in India and abroad including the 150th Anniversary of Darcy’s Law in Dijon, France. The members of IFCGR have served as members of many scientific committees including Dr. Ahmed as Associate Editor of the Hydrogeology Journal.

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The research output of the Centre has been reported through a number of research papers (more than 60) published in SCI journals including the best journals of the subject, Water Resources Research and Journal of Hydrology.

Books Edited:
India has made significant progress in developing its water resources and supporting infrastructure, post-independence. Large-scale investments in water storage structures have contributed significantly in India’s march towards a self-sustaining economy. India today has the capacity to store about 200 BCM of water, irrigate about 90 Mha and potentially generate about 30,000 MW of hydropower (World Bank, 2005). Despite these efforts, rapid development, increasing population and non-uniform distribution of water has seen an ever-widening gap between the demand and supply of this precious natural resource both at national and regional levels. In addition, problems related to water management like expansion, maintenance and operation costs have added to India’s struggle for achieving a water sustainable scenario. India has about 16 percent of the world’s population but only 4 percent of its water resources with the per capita water availability of around 1,170 cum/person/year (NIIH 2010).
recharge and sustainable management are crucial for the country. Furthermore, domestic, agricultural pollutions are widespread in the subcontinent apart from specific hazards due to industrial and mining activities. At the same time the demand for clean water is growing rapidly through urbanisation, population increase, rising income and economic growth. Our capacity to address these important issues like the management of water and soil resources, climatic impacts, nutrient cycles and diverse pollution is therefore crucial.

Building on the strengths of the collaboration between IISc and IRD as part of the IFCWS first phase during the period 2009-2013, the second phase was launched in 2014 to consolidate the present research efforts and to develop new partnerships and projects. The research programme will encompass both basic and applied aspects of metal dissolution processes from mine and industrial environments, their transport across watercourses, bacteria-mineral interaction, remediation and understanding of underlying mechanisms. The formation of nano-particles through bio-precipitation routes will be especially studied. The target elements include arsenic, chromium, zinc, cadmium and copper.

The objectives are directed towards developing technologies for the abatement of toxic metals from aqueous systems. The research programme will encompass both basic and applied aspects of metal dissolution processes from mine and industrial environments, their transport across watercourses, bacteria-mineral interaction, remediation and understanding of underlying mechanisms. The formation of nano-particles through bio-precipitation routes will be especially studied. The target elements include arsenic, chromium, zinc, cadmium and copper.

The Indian Ocean is a dynamically complex and a highly variable system, in particular under the monsoonal influence. The main objective is the understanding of climate variability, large-scale hydrology of the Indian subcontinent, physical and biogeochemical dynamics in the Indian Ocean, which are still rudimentary in many aspects. The topics to be studied include: (i) the large-scale continental hydrology of the Indian Subcontinent, (ii) the Northern Indian Ocean water cycle (impact of continental runoffs on hydrology and on salinity evolution of the Bay of Bengal), (iii) the climate variability and monsoon (role of air-sea coupling in modulating climate variability including tropical cyclones and monsoon, regional impacts of climate change on monsoon rainfall), and (iv) the biogeochemistry of the Northern Indian Ocean.

Environmental Biotechnology and Bioremediation

The objectives are directed towards developing technologies for the abatement of toxic metals from aqueous systems. The research programme will encompass both basic and applied aspects of metal dissolution processes from mine and industrial environments, their transport across watercourses, bacteria-mineral interaction, remediation and understanding of underlying mechanisms. The formation of nano-particles through bio-precipitation routes will be especially studied. The target elements include arsenic, chromium, zinc, cadmium and copper.

In the context of rapid urbanization and also climate change, it becomes also important to undertake studies of urban ecosystems related to hydrological cycling, sustainable groundwater use, storm water management, analysis of water network distribution system with emphasis on optimal management, leakage and water quality aspects. Rain water harvesting at both local scale as well as at large scale becomes an important component of the urban water cycle. With the use of ICT, water management in an urban setting takes a new turn to bring in new technologies / ideas / algorithms to deal with and leading towards an integrated urban water supply. To achieve the second phase objectives, the partnership between the Indian and French sides has been expanded.

Apart from the three research units with IRD leadership involved in phase 1, namely Géosciences Environnement Toulouse (GET), Laboratoire d’Études en Géophysique et Océanographie Spatiales (LEGS), Centre Européen de Recherche en Géosciences de l’Environnement (CEREGE), three more units have been added to bring additional competences: Centre d’Études Spatiales de la Biosphère (CESBIO) Toulouse, Biogéochimie et écologie des milieux continentaux (BIOEMCO), Paris and Laboratoire d’Océanographie Dynamique et de Climatologie (LOCEAN), Paris. This has led to the strengthening of the pre-existing collaborations between IISc and IRD with other Indian research institutions namely National Institute of Oceanography (NIO), Goa and Indian institute of Tropical Meteorology (IITM), Pune in water sciences.

Outcomes on water development issues are expected to be seen in domains as diverse as water and soil management in rural agricultural watersheds, urban ecosystems, ecologically intensive agriculture (vermicompost, biochar, organic fertilizers), remediation strategies of mining and industrial wastes, cyclone and monsoon prediction, fisheries management. The vision of the IFCWS phase 2 is also to strengthen and develop the collaborations in water sciences and environment at regional (Indian Ocean countries, SE Asia) and international levels (Africa, Europe, Japan and USA), and to ensure technology transfers through the existing or forthcoming South-South collaborations (Cameroon and SE Asia, mainly).
In order to ensure a better visibility of Indo-French actions and further facilitate synergies and collaborative work in the water sector between France and India, it was decided to establish a network. The IFWN was launched by the Ambassador of France to India, H.E. Mr François Richier, in 2013, and is driven by the Embassy of France in India, the National Institute of Advanced Studies (NIAS), and CEFIPRA.

IFWN aims to develop and strengthen partnerships between India and France in the water sector with a multidisciplinary perspective, by bringing together private enterprises, public entities, individuals, academics and any other individual or group from France or India working in the sector. A first preliminary seminar was organized at the National Institute of Advanced Studies (NIAS) on 7th and 8th November 2011 with over sixty France and India participants. The seminar culminated in a common expression of willingness towards the formation of the Indo French Water Network. IFWN is managed by a Steering Committee of experts from government, industry and academia from France and India.

IFWN is built on the foundation of strong collaborations between France and India on the resource and the quality of groundwater, the water cycle and biogeochemical cycles in tropical environment and finally the treatment and reuse of water in urban and mining environment. The two Indo-French joint labs in the water sector have developed stable and strong research collaboration for more than 13 years.
Technology Summit on 23rd and 24th October 2013. The first round table discussed the role of urban planning while addressing the demand for water and waste management in the coming future. The second panel discussion focused on the key areas of research and development on agricultural water resource management, and initiate or improve those where synergies between India and France exist.

**NOVEMBER 2013: INDO-FRENCH WORKSHOP ON WATER RESOURCES MANAGEMENT USING MICROWAVE REMOTE SENSING**

The first IFWN workshop took place at IISc Bangalore on 13th November 2013. Dr. Yann Kerr Director CESBIO, Toulouse, France and Prof. Sekhar Muddu, IISc Bangalore, India were the co-organizers of this workshop. This one day workshop focused on Water Resource Management using Remote Sensing. About 30 participants from various research institutions such as Indian Space Research Organization (ISRO), French National Centre for Space Studies (CNES) Toulouse, The National Institute for Agricultural Research (INRA) Bordeaux, Indian Institute of Science Bangalore (IISc), National Remote Sensing Centre (NRSC) Hyderabad, Karnataka State Natural Disaster Monitoring Centre (KSNDMC) Bangalore, and Institute of Research for Development (IRD) Paris participated with stimulating discussions leading to new collaborations.

**FEBRUARY 2014: INDO-FRENCH WORKSHOP ON WATER AND LAND MANAGEMENT**

The four-day workshop on water and land management was co-organized by Prof. Devi Prasad, Department of Ecology and Environmental Sciences, University of Pondicherry and Dr. Audrey Richard-Ferroudj, French Institute of Pondicherry (IFP). This interdisciplinary workshop brought together 80 French and Indian participants to discuss the interactions and interfaces between water management and land development across jurisdictional and sectorial boundaries and how to go towards integrated management of surface and ground water possibilities. A one day field trip in the countryside of Pondicherry was extremely useful to base the discussion on the ground reality. The discussions led to the identification of topics of common interest, such as interdisciplinary approach of groundwater recharge, the farmer of the future and water resources, domestic water in urbanizing areas, etc.

**JUNE 2014: NEW INTERACTIVE WEB PLATFORM**

The new IFWN website was officially launched on 17th June 2014. The [www.ifwn.org](http://www.ifwn.org) is a virtual platform for the IFWN members to share and exchange ideas. The main goal of this website is to facilitate a structured dialogue between Indian and French actors in the water sector through a virtual platform. It also allows members to find partners, share their research, ideas and findings with the IFWN community.

**JUNE 2014: NEW CALL FOR WORKSHOP PROPOSALS**

A call for workshop proposals in water sector was launched on 18th June 2014. The IFWN will cover mobility costs and logistic expenses for the workshop. The submission deadline is 14th August 2014. For more information, please visit [http://ifwn.org/call-for-seminarworkshop-proposals-in-the-water-sector/](http://ifwn.org/call-for-seminarworkshop-proposals-in-the-water-sector/)

**JULY 2014: OFFICIAL VISIT OF FRENCH FOREIGN AFFAIRS MINISTER**

Mr. Laurent FABUSS, Hon’ble French Minister for Foreign Affairs and International Development, former Prime Minister of France, visited India on 30th June – 1st July 2014. He was the first western dignitary to engage with the new Indian government. In preparation of the 2015 Paris Climate Conference, issues of climate change and sustainable growth are high on the global agenda and Indo-French partnership. On 1st July, the Minister chaired a panel discussion on “Sustainable Growth in Response to Climate Change: Indo-French Perspectives”. In his speech, he emphasized the importance of Indo-French cooperation through the IFWN.

**JULY 2014: IFWN JOINS INNO-EUROPEAN CALL FOR PROPOSALS**

IFWN is associating with the INNO INDIGO Partnership Programme call for proposals 2014 in the field of “Clean Water and Health”. The French Embassy in India will support mobility costs for scientific exchanges between India and France for the successful projects of this call. These mobility grants are aimed at promoting and consolidating Indo-French collaboration, in a European context, through scientific exchange visits in the water sector. For more information, please visit [http://indigoprojects.eu/funding/inno-indigo-calls/ipp1/](http://indigoprojects.eu/funding/inno-indigo-calls/ipp1/)

**Indo-French Workshop on Himalayan Tectonics**

Himalayas represent earth’s most impressive and spectacular example of geological architecture, sculptured by intense denudation and involving a formidable combination of processes. These include frost-shattering, chemical weathering, glacial erosion, fluvial incision and mass movement processes. Understandably, Himalayas have been a matter of great interest to geoscientists across the world. Himalayan landscape is an exciting display of tectonic architecture, lithostratigraphy, evolutionary history, episodic magmatism and metamorphism. As a result it provides exciting opportunities to study variation along its entire length from pre-cambrian age to present times.

In the above context, CEFIPRA organised an Indo-French workshop cum field study on “Himalayan Tectonics” from 21-29 July, 2014. It was coordinated by Prof. T Ahmed, Vice Chancellor, Jamia Millia University, New Delhi and Dr. Satish Singh & Dr. Yann Klinger from Institut de Physique du Globe de Paris, the schedule included fieldwork, group discussions and a seminar. 30 Indian and French geologists participated in the workshop.

The group started its journey on 21 July (Day 1) from Jammu to reach Srinagar after cutting across three major tectonic zones viz., the Outer Himalaya, the Lesser Himalaya and the Kashmir Tethyan Himalaya. Enroute the group stopped at Jhaljari Kozli Nala, Kanganur, Udhampur Snycline near Patnitop, Peerah, Digpal and Nowagam village for studying these zones.

On Day 2 (22 July) the participants’ visited Guryul Ravine to review the Zewan formation, Kahanmuh formation, Permo-Triassic Boundary, Panjal Traps and Triassic Limestone formation along the Srinagar-Khananumh stretch, 13 km east of Srinagar.

On Day 3 (23 July) the group departed for Sonamarg, 87 km away from Srinagar at an altitude of 3000m above mean sea level. Along the route the group explored quaternary sediments of Karez Group, basic volcanic rocks of Panjal Traps, Triassic Limestone and Zewan Formations and Thajiwas glacier. The discussions were focussed on thick sediments of Karez group in Kashmir valley and the rocks of Saikhala series.

On Day 4 (July 24) the group took the road to Kargil beyond the famous Zozila pass on Srinagar-Leh highway. The group studied highly deformed rocks of Triassic Limestone, Metamorphic rocks of Zanskar Crystalline, basic volcanic rocks of Panjal and Drass volcanics, granitic rocks of Kargil Igneous Complex, mafic-sediments of Indus Formations that line the sides of the road from Sonamarg to Kargil. Drass formation, Kargil Formation and Kargil Igneous Complex entrapped between the Drass volcanics to the south and the Ladakh Batholith to the north were of particular interest.

**Cont. on page XIX**
## MOBILITY OF SCIENTISTS SUPPORTED UNDER CEFIPRA PROJECTS
### JUNE - JULY 2014

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Name and Institution</th>
<th>Institute Visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puzzling properties of Ultrathin polymer films</td>
<td>Prof. Alain Gilhaut, Laboratoire de Physique de l’Etat Condense, Université du Maine</td>
<td>Saha Institute of Nuclear Physics, Kolkata, India</td>
</tr>
<tr>
<td>Discontinuous Galerkin Method for Nonlinear Acoustics</td>
<td>Dr. Basak Sambandam, Department of Mathematics, Indian Institute of Technology Bombay, Mumbai</td>
<td>Institut Jean Le Rond d’Alembert, Université Pierre et Marie Curie (Paris 6), Paris, France</td>
</tr>
<tr>
<td>eSynapse based on heterostructures of binary oxides</td>
<td>Prof. Bipin Rajendra, Department of Electrical Engineering, IIT Bombay, Mumbai</td>
<td>Institut des Nanotechnologies de Lyon, CNRS, Ecole Centrale de Lyon, Ecully, France</td>
</tr>
<tr>
<td>Analytic aspects of modular forms</td>
<td>Dr. Dipendra Prasad, School of Mathematics, Tata Institute of Fundamental Research, Mumbai</td>
<td>Université Paris 13, Villetaneuse, France</td>
</tr>
<tr>
<td>Arithmetic circuits computing polynomials</td>
<td>Dr. Hervé Fournier, Institut Mathematique de Jussieu, Université Paris Diderot-Paris 7, Paris</td>
<td>Indian Institute of Technology Bombay, Mumbai</td>
</tr>
<tr>
<td>Molecular mechanisms of immune evasion by M. Tuberculosis</td>
<td>Dr. Jagdeesh Bayry, Centre de Recherche des Cordeliers, INSERM, Paris</td>
<td>Indian Institute of Science, Department of Microbiology and Cell Biology, Bangalore</td>
</tr>
<tr>
<td>Bimetallic Catalysis Involving Ruthenium and Palladium: C-H Bond Activation/Functionalization and Beyond</td>
<td>Dr. Jitenkumar K. Bera, Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur</td>
<td>Institut Sciences Chimiques de Rennes, Université de Rennes, France</td>
</tr>
<tr>
<td>Real time imaging through for over long distance (RTIFOLD)</td>
<td>Prof. Julien Fade, Institut de Physique de Rennes, Université de Rennes 1, Campus de Beaulieu, Rennes, France</td>
<td>Raman Research Institute, Bangalore</td>
</tr>
<tr>
<td>Cenozoic denudation of South India</td>
<td>Prof. M. Jayananda, Department of Geology, Centre of Advanced Studies, University of Delhi</td>
<td>IRD CEREGE Aix Marseille Université, Aix en Provence, France</td>
</tr>
<tr>
<td>Controlling for Upscaling Uncertainty in Assessment of Forest Aboveground Biomass in the Western Ghats of India</td>
<td>Dr. Pierre Couturon, UMR AMAP (Botanique et bioinformatique de l’Architecture des Plantes), Montpellier, France</td>
<td>National Remote Sensing Centre, Hyderabad</td>
</tr>
<tr>
<td>Extreme QCD in the LHC Era</td>
<td>Prof. Rajeev S. Bhalerao, Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai</td>
<td>Institut de physique théorique CEA Saclay, France</td>
</tr>
<tr>
<td>Smart Structure maintenance strategies based on Structural Health Monitoring damage indicators</td>
<td>Prof. Ranjan Ganguli, Indian Institute of Science, Bangalore</td>
<td>Université Paul Sabatier, Toulouse, France</td>
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<td>Controlling for Upscaling Uncertainty in Assessment of Forest Aboveground Biomass in the Western Ghats of India</td>
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<td>National Remote Sensing Centre, Hyderabad</td>
</tr>
<tr>
<td>Studying the role of rpoN, the alternative sigma factor, in the pathogenicity of R. solanacearum, the causal agent of bacterial wilt in plants</td>
<td>Dr. Swendika Kumar Ray, Tezpur University, Department of Molecular Biology and Biotechnology, Assam</td>
<td>Laboratoire des Interactions Plantes Micro-organismes, INRA, France</td>
</tr>
<tr>
<td>Studying the interaction of NAD-dependent deacetylase Sirt1 in the testis</td>
<td>Dr. Ullas Kollihar Sretharam, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005</td>
<td>Institut de Pharmacologie et de Biologie Structurale, Toulouse, France</td>
</tr>
<tr>
<td>Novel nano technological approaches for treatment of leishmaniasis using 2- propylquinoline</td>
<td>Dr. V. Kesavan, Department of Biotechnology, Indian Institute of Technology Madras, Chennai</td>
<td>Université Paris-Sud 11, Chatenay Malabry, France</td>
</tr>
</tbody>
</table>
CONGRATULATIONS!! 2014 CEFIPRA-ESONN FELLOWS

CEFIPRA, in collaboration with Joseph Fourier University, Grenoble; Grenoble-INP, is supporting the participation of Indian doctoral students in the European School on Nanoscience and Nanotechnology (ESONN) training programme - Session 2014, the details of which is available in (http://esonn.fr). The session is scheduled to be organised from August 24th - September 13th 2014 at Grenoble, France.

The following eight students have been selected for participating in the ESONN Session 2014. The cost of their participation in ESONN shall be supported by CEFIPRA:

- **Atul Kumar Nishad**
  IIT, Ropar

- **Biplab Pal**
  University of Kalyani, West Bengal

- **Sonam Madani**
  IIT, Indore

- **Subodh Kumar Gautam**
  Inter University Accelerator Centre, New Delhi

- **S Kaviya**
  IIT Madras, Chennai

- **Kshipra Naik**
  BITS Pilani, Goa

- **Mahesh Chandra**
  IIT, Indore

- **Prarthana V.D.**
  IISc, Bangalore

CEFIPRA wishes all the shortlisted candidates an informative and productive participation in European School on Nanoscience and Nanotechnology (ESONN).

DST-ANR TARGETED COLLABORATIVE RESEARCH PROGRAMME (2014)

Under the CEFIPRA initiated targeted Collaborative Research Programme between Department of Science and Technology (DST), Government of India and Agence Nationale de la Recherche (ANR), 92 pre-project proposals were received in the areas of Neuro Science and Engineering Sciences. After two stages of evaluation process, a Joint Indo-French Committee has selected the following two project proposals for support.

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Indian PI</th>
<th>French PI</th>
</tr>
</thead>
</table>
| Study of the association of micro RNA and mitochondria and their role in regulation of neuronal cell death in Fragile X Tremor Ataxia Syndrome (FXTAS) | Dr Rajesh Singh
Associate Professor
Department of Biochemistry
The M S University of Baroda, Gujrat, India | Dr. N. Charlet Berguerand
Group Leader
INSERM, France |
| Self-sorting donors and acceptors assemblies | Dr Subrit Ghosh
Associate Professor
Polymer Science Unit
Indian Association for the Cultivation of Science, Kolkata, India | Dr. Philippe Mésini
Directeur de recherche,
Institut Charles Sadron, France |

Reader's MAIL

Bonjour à vous. Merci pour cette belle parution qui est en même temps un bon souvenir de notre rencontre.

Dr. Denis Randet, Délégué général
Association Nationale de la Recherche et de la Technologie, Paris

Excellent work and newsletter!

Dr. Thilo Schinfeld
Délégué aux affaires internationales/Deputy Director International Affairs, Aerospace Valley, Toulouse

Thank you very much for this very interesting newsletter and congratulations for all your activities.

Madame Olivia Calvet-Soubirou
Conseiller, Inde Service Amériques, Direction du développement international des entreprises, Chambre de Commerce et d’Industrie de Région Paris Ile de France

Thank you for the impressive report/update on CEFIPRA.

Prof. Raghavendra Gadagkar
Centre for Ecological Sciences, Indian Institute of Science, Bangalore

As an ex-participant in several projects supported by CEFIPRA, it gives me great pleasure to know, through ENSEMBLE, the excellent work done by the Indian and French scientists. Wishing the organisation all the best!

Dr. R. Suryanarayanan
Hony scientist, Univ Paris Sud, Orsay, France

Indo-French Workshop on Himalayan Tectonics

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Day 5 (25th July) of the field trip was devoted to study Formations in Mulbek, Lamayuru and Leh. Day 6 (26th July) saw the group off for the famous Tso-Morari Lake located at a height of 12000 feet southeast of Leh. After crossing the Indus River at Mahe Bridge, the team on its way to Tso-Morari Lake near Karzog village traversed the Late Cretaceous-Eocene Ladakh Batholith. This was a great opportunity to see geologically exciting landscape. Presentations by various participants, not only analysed the observations during the field excursion but also explored possibilities of advancing Indo-French collaboration in this field through CEFIPRA.

All participants felt that field trips such as these, especially those involving students/young scientists can go a long way to future collaborations between India and France. The French participants expressed great interest to develop contacts with Indian geologists who could jointly work with them on their area of expertise and vice-versa.
CALL FOR PROPOSALS

Call for proposals in Information and Communication Science & Technology under CEFIPRA initiated targeted programme.

Department of Science and Technology (DST) and Institut National de Recherche en Informatique et en Automatique (INRIA) jointly with the Centre National de la Recherche Scientifique of France (CNRS) launch a joint call for proposals to foster collaboration between scientific communities of two countries in the area of Information and Communication Science & Technology. Jointly selected proposals will be funded in India by DST and in France by Inria (for INRIA Research Team) or by CNRS (for CNRS Research unit).

In India, on behalf of the Department of Science & Technology, CEFIPRA invites proposals from the Indian scientists / researchers.

Proposals will be supported in the following scientific areas:

- Big Data
- Computer Science for Biology and Life Science
- Reliable and Scalable Computation

Eligibility: Applicants must be holding a permanent position as scientists/ Faculty members in universities/ deemed universities, academic institutes and national research and development laboratories/institutes.

For details regarding the application process, format, supporting documents and funding pattern please visit www.cefipra.org or contact:

The Director
Indo-French Centre for the Promotion of Advanced Research,
5B Ground Floor, India Habitat Centre, Lodhi Road, New Delhi 110 003
Email: director@cefipra.org • Website: www.cefipra.org | Tel. : (+91-11) 24682251, (+91-11) 24682252, Fax: (+91-11) 24688632

DEADLINE FOR SUBMITTING OF PROPOSALS: 30TH SEPTEMBER, 2014

CALL FOR PROPOSALS

INDO-FRENCH CENTRE FOR APPLIED MATHEMATICS

The Indo-French Centre for Applied Mathematics (IFCAM) has been jointly set up by the Indian and French Governments at the Indian Institute of Science, Bangalore as an international joint research unit. IFCAM is designed as a platform for cooperation in mathematical sciences with the primary focus being the area of applied mathematics.

IFCAM funds joint research projects between Indian and French investigators in the area of applied mathematics (interpreted broadly to include projects in other areas like engineering and physics long as they have non-trivial mathematical content), exchange visits of faculty and students (within the ambit of a research collaboration), post-doctoral fellowships, joint research workshops and visits by Indian researchers (particularly from universities and colleges) to IFCAM. In addition there are targeted funds made available by various French institutions for visits, PhD scholarships etc. Indian researchers and students can apply to the concerned French Institution for these targeted activities. Further details on all of the above can be obtained from the IFCAM web site: http://www.math.iisc.ernet.in/~ifcam/

Proposal for joint research projects and research project should have an Indian and French principal investigator. Proposal should be in the format given on the IFCAM web site. This year, priority will be given to proposals in statistics, machine learning and mathematical biology. Completed proposal should be sent by email to ifcam@math.iisc.ernet.in and hard copies should be sent to the following address:

The Director
Indo-French Centre for Applied Mathematics, Department of Mathematics, Indian Institute of Science, Bangalore 560 012, India
Tel: +91-80-2360 0365 Fax: +91-802360 0365

DEADLINE FOR SUBMITTING OF PROPOSALS: 28TH SEPTEMBER, 2014

Indo-French Centre for the Promotion of Advanced Research (CEFIPRA) is a model for international collaborative research in advanced areas of science and technology. The centre was established in 1987 with support from Department of Science & Technology, Government of India and the Ministry of Foreign Affairs, Government of France.

For further information please contact:
Pour toute information complémentaire, veuillez contacter:
Director
Indo-French Centre for the Promotion of Advanced Research
5B, Ground Floor, India Habitat Centre, Lodhi Road, New Delhi-110 003 INDIA
Tel: 011 2468 2251, 2468 2252, 2463 3567, 4352 6261
Fax: +91 -11-24648632
E-mail: director@cefipra.org | Web: www.cefipra.org