# CUMULATIVE INDEX — Vol. 85

## Editorial/Guest Editorial

### Editorial

Sanjay Puri  

### Guest Editorial

Harsh Gupta  

Pankaj Kumar, Ranjit Kumar and V Ramanathan  

A Decadal Status of Microbiological Research in India  

Amit Ghosh and Rup Lal  

### Medal Lecture

Need for Integration of Ayurveda with Modern Biology and Medicine  

S C Lakhota  

### Review Articles

Accelerators for Science and Society  

S Kailas and R Chidambaram  

Cyclotron Motion and the Enigma of Orbital Magnetism – What Does The Boundary Do?  

Sushanta Dattagupta  

New Opportunities in Heterogeneous Catalysis  

Dinesh Jagadeesan, Dnyanesh Vernekar, Sharad Gupta and Garima Jaiswal  

Riverine Flood Hazard: Part A. Types, Processes and Causative Factors  

Vikrant Jain, Mussie Beyene, L. Sardine Varay, Robert James Wasson and Shaleen Jain  

Riverine Flood Hazard: Part B. Disaster Risk Reduction in India  

Robert James Wasson, Vikrant Jain, Ajay Katuri, Siddhartha Lahiri, Surya Parkash, Ashok Kumar Singhvi, Navarun Varma, Priya Bansal and C. Joon Chuah  

Hydrologic Impacts of Climate Change: Quantification of Uncertainties  

R Chandra Rupa and P P Mujumdar  

Philosophies for the Palaeosciences – A Review  

P Morthekai
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Overview of Nanostructured Li-based Thin Film Micro-batteries</td>
<td>Angalakurthi Rambabu, Saluru B Krupanidhi and Prabeer Barpanda</td>
<td>121-142</td>
</tr>
<tr>
<td>Decoding and Relay of Calcium Signals by CBL-CIPK Module in Plants</td>
<td>Mukesh Kumar Meena, Atish Sardar and Debasis Chattopadhyay</td>
<td>143-156</td>
</tr>
<tr>
<td>Mechanism of Action of Bacterial Transcription Terminator Rho</td>
<td>Passong Immanuel R Chhakchhuak, Ajay Khatri and Ranjan Sen</td>
<td>157-168</td>
</tr>
<tr>
<td>Emerging Roles of Arf-Like GTP-Binding Proteins: From Membrane Trafficking to Cytoskeleton Dynamics and Beyond</td>
<td>Rituraj Marwaha, Devashish Dwivedi and Mahak Sharma</td>
<td>189-212</td>
</tr>
<tr>
<td>Cell-Derived Microparticles (MPs) and Their Role in Unexplained Recurrent Pregnancy Loss</td>
<td>Rucha Patil and Shrimati Shetty</td>
<td>213-227</td>
</tr>
<tr>
<td>Nationally Important Agricultural Heritage Systems in India: Need for Characterization and Scientific Validation</td>
<td>Anurudh K Singh and Rai S Rana</td>
<td>229-246</td>
</tr>
<tr>
<td>The Himalayan Cryosphere: Appraisal of Climate-Glacier Inter-linkages</td>
<td>B R Arora and Resource team</td>
<td>319-342</td>
</tr>
<tr>
<td>Gravity and Geodetic Studies in India: Historical Observations and Advances During the Past Decade</td>
<td>N Srinivas and V M Tiwari</td>
<td>343-361</td>
</tr>
<tr>
<td>Research Highlights of the Indian Contributions to Geomagnetism and Aeronomy in the 21st Century</td>
<td>A Manglik</td>
<td>363-380</td>
</tr>
<tr>
<td>Hydrological Studies in India During Last Decade: A Review</td>
<td>Tanvi Arora and V M Tiwari</td>
<td>381-401</td>
</tr>
<tr>
<td>The Indian Monsoon: Past, Present and Future</td>
<td>P Maharana and A P Dimri</td>
<td>403-420</td>
</tr>
<tr>
<td>Physical Sciences of the Ocean: A report to IAPSO/IUGG</td>
<td>S Prerna, B Paul, P A Francis and S S C Shenoi</td>
<td>421-429</td>
</tr>
<tr>
<td>Recent Seismological Investigations in India</td>
<td>Prakash Kumar</td>
<td>431-451</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
<td>Pages</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Controlled Source Seismology in India in the 21st Century</td>
<td>Kalachand Sain</td>
<td>453-468</td>
</tr>
<tr>
<td>Koyna, India, An Ideal Site for Near Field Earthquake Observations</td>
<td>Harsh K Gupta</td>
<td>469-480</td>
</tr>
<tr>
<td>Recent Advancement in Studies of Deccan Trap and Its Basement; Carbonatites and Kimberlites – An Indian Perspective in Last Five Years</td>
<td>Jyotiranjan S Ray and G Parthasarathy</td>
<td>481-492</td>
</tr>
<tr>
<td>Excited State Proton Transfer of a Versatile Fluorescent Probe in Different Reverse Micelles: An Overview</td>
<td>Sharmistha Dutta Choudhury and Haridas Pal</td>
<td>507-516</td>
</tr>
<tr>
<td>Thioflavin-T: A Versatile Optical Probe for Chemo and Biosensing</td>
<td>Aafrin M Pettiwala, Niyati H Mudliar and Prabhat K Singh</td>
<td>517-535</td>
</tr>
<tr>
<td>Carbon Soot for Electrochemical Energy Storage Applications</td>
<td>Darshna D Potphode, Ananya Gangadharan and Chandra S Sharma</td>
<td>537-551</td>
</tr>
<tr>
<td>Role of MicroRNAs in Abiotic and Biotic Stress Resistance in Plants</td>
<td>Ram Jatan and Charu Lata</td>
<td>553-567</td>
</tr>
<tr>
<td>HDAC11: The Lone Mystic Member of Class IV HDAC</td>
<td>Shikha Raina and Arunasree M Kalle</td>
<td>569-576</td>
</tr>
<tr>
<td>Actin Cytoskeleton and Membrane Interactions: Role in GPCR Function and Organization</td>
<td>Shikha Prakash, Anjali Krishna and Durba Sengupta</td>
<td>577-587</td>
</tr>
<tr>
<td>Flood Modelling: Recent Indian Contributions</td>
<td>Chandra Rupa R and P P Mujumdar</td>
<td>705-722</td>
</tr>
<tr>
<td>Artemisia (Asteraceae) Essential Oils: Compositional Variation and Mechanisms of its Origin, Biosynthesis of Constituents, Correspondence between Biological Activities and Ethnomedicinal usage and Repurposment Prospects</td>
<td>Richa Goel, Vijender Singh, Raj Kumari, Renu Kumari, Suchi Srivastava, Gopal Rao Mallavarapu, Divya Goel and Sushil Kumar</td>
<td>723-790</td>
</tr>
<tr>
<td>Voyaging around ClpB/Hsp100 Proteins and Plant Heat Tolerance</td>
<td>Ratnesh Chandra Mishra and Anil Grover</td>
<td>791-802</td>
</tr>
</tbody>
</table>
Description of New Taxa of Prokaryotes: A Decadal work in India
Ch. Sasikala, Jagadeeswari Uppada and Ch. V Ramana
901-909

Diversity of Bacteria from Antarctica, Arctic, Himalayan Glaciers and Stratosphere
Sisinthy Shivaji, Madhab K. Chattopadhyay and Gundlapally S Reddy
911-925

Agricultural Microbiology Research Progress in India in the New Millennium
D L N Rao, T K Adhya and A K Saxena
927-949

Industrial Microbiology: Current status of Research & Development in India
B S Chaddha
951-963

Microbe-assisted Biodegradation, Bioremediation and Metabolic Engineering
Hemant J Purohit, Dayananda S and Phale Prashant
965-985

Advances in Environmental Biotechnology in India: Status Report
V C Kalia
987-1000

Microbial Genomics and Metagenomics in India: Explorations and Perspectives
Princy Hira, Abhay Bajaj, Akshita Puri, Chandni Talwar, Himani Khurana,
Ram Krishan Negi, Mallikarjun Shakarad, Yogendra Singh and Rup Lal
1001-1025

Medical Microbiology in India: The Recent Developments in the basic Research,
Diagnostics and Vaccines
JS Virdi
1027-1039

Mycology Research in India in the Last Ten Years (2008-2018)
A Chakrabarti
1041-1052

Human Gut Microbiome Research in India: A Retrospect and Future Opportunities
Dhiraj P Dhotre, Shreyas V Kumbhare, Vilas P Sinkar and Yogesh S Shouche
1053-1067

Research Papers

Implementation of Dynamic Dual Input Multiple Output Logic Gates via Enhanced
Logical Resonance in Non-Locally Coupled Duffing Oscillators
P R Venkatesh
247-255

A Model for Energy Usage in IEEE 802.11s Based Mesh Networks
Veenu Mor and Harish Kumar
257-274

Population Assessment and Habitat Distribution Modelling of High Value
Corylus jacquemontii for in situ Conservation in the State of Himachal Pradesh, India
Shiv Paul, S S Samant, Manohar Lal and Jeet Ram
275-289
Quantitative Detachment Mechanics of Hydra from Substrates
Neha Khetan, Shagun Maheshwari and Chaitanya A Athale 291-299

Geometrical Elucidations and Approximation of some Functional Equations in Numerous Variables
Hemen Dutta and B V Senthil Kumar 603-61

Raman Spectroscopy in Forensic Analysis of Blue Gel Inks on Paper
V Ramanathan and L Keseven 613-618

Radiocarbon Dating of Historical Bricks: Exploring the Unprotected Archaeological Mounds in the Environs of Excavated Site of Nalanda
Sonia Das, Pankaj Kumar, M B Rajani and Sundeep Chopra 619-628

Quantification of Organic Carbon from Biomass Versus Non-Biomass Burning Emissions to Fine Aerosol
Atinderpal Singh and Neeraj Rastogi 629-636

Anthropogenic Influences on the Hydrogeochemistry and Water Quality of Ground Water in Singrauli Power Belt Region, Central India
Rakesh Kumar, Sudesh Chaudhary and Sudesh Yadav 637-658

Manifestations of Weathering on Granitic Rocks in the Himalaya and Bundelkhand Regions: A Field-based Observation
Md Maroof Azam, Anurag Chaudhary, Pankaj Kumar and Jayant K Tripathi 659-665

Measurement of PM10, PM2.5 and Black Carbon and Assessment of Their Health Effects in Agra, A Semi-arid Region of India
Pratima Gupta, Ashok Jangid and Ranjit Kumar 667-679

Sequential Nitrogen Ion Implantation in Si-Based GaAs Matrix and Subsequent Thermal Annealing Process: Electrical Characterization
Nand Lal Sharma, Saravanan Rajamani, Vladimir Shengurov, Nikolay Baidus, Dmitry Korolev, Alyona Nikolskaya, Alexey Mikhailov, David Tetelbaum and Mahesh Kumar 681-687

Agroindustry By-Product Based Formulations of Burkholderia gladioli for Plant Growth
Aparna Baban Gunjal and Balasaheb Pandurang Kapadnis 689-695

An Asymmetric Hybrid Watermarking Mechanism using Hyperchaotic System and Random Decomposition in 2D Non Separable Linear Canonical Domain
Pankaj Rakheja, Rekha Vig and Phool Singh 803-818

Carbon-ion Therapy in the Geant4 Binary Light Ion Cascade Model
SNL Sirisha and Sonali Bhatnagar 819-827
Flexural Analysis of Functionally Graded Thin Walled Beams
*S B Singh, Himashu Chawla and Aditya Narkhede* 829-842

Investigation on Yttria Stabilized Zirconia Coated Piston Crown using different Biodiesels
*G Vidyasagar Reddy, N Govinda Rasu and T Hari Prasad* 843-851

Profiling Bacterial Diversity of B2 Cave, a Limestone Cave of Baratang, Andaman and Nicobar Islands, India
*Arun Kumar De, Ramachandran Muthiyan, Jai Sunder, Debasish Bhattacharya, A Kundu and S Dam Roy* 853-862

Polycystic Kidney Disease: A Paradigm in Major Kidney Disorders
*Varsha Singh* 863-886

Rhizopshere Trichoderma isolates as potential Biocontrol Agent for Maydis Leaf Blight Pathogen (*Bipolaris maydis*) in Fodder Maize
*Ashlesha, Harpreet Oberoi and Parminder Kumar* 887-895

**News & Supplements**

*Academy News* 301-313

*Contents of Encyclopedia of Solid Earth Geophysics* 493-504

*Academy News* 1067-1090

Cumulative Index 1091-1076