



JOURNEY TILL THE

100th

VOLUME

OF THE

JOURNAL OF THE INDIAN INSTITUTE OF SCIENCE

**A Multidisciplinary
Reviews Journal**

Co-published by IIScPress and Springer



Springer



**IISc
Press**



The Journal of the Indian Institute of Science is published by the Institute since 1914. Its historic significance lies in the fact that it is the second scientific journal to be published from India. Since its origin, research work carried out by the Institute and other institutions around the world was accepted for publication in the journal.

The current format of the Journal came about in 2007 to focus exclusively on invited reviews on specific themes, each issue being edited by eminent researchers who serve as Guest Editors. Since then, this Journal has become a quarterly with large circulation in India and abroad. This Journal is the right medium to reach out to scientific and educational institutions, industrial R&D, government research laboratories, students, scientists, engineers, engineering college teachers, policy makers and project leaders in science and technology.

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L. M. Patnaik (2002–2008)

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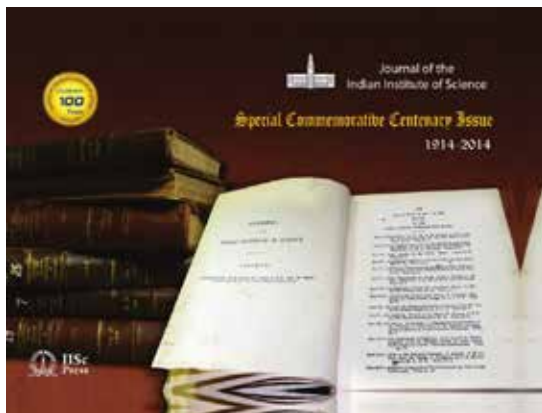
Kavitha Harish, Office of
Communications, IIScPress, IISc

The Many Avatars of the Journal of the Indian Institute of Science

By TN Guru Row

Looking back at over 100 years of its publication

I once asked the students at one of my lectures whether they had heard of the Journal of the Indian Institute of Science. The response I received was depressing, particularly because I happened to be the Journal's Editor at the time. Except for a few hands that hesitatingly went up in a class of over 70 students, it was clear that none had had a look at the Journal.



Cover page of the Journal issue commemorating its centenary in 2014

I soon found out that many faculty members too were unaware of the Journal's existence, even though it has a citation index that is respectable among current Indian journals and is also on Web of Science with an impact factor of 1.8.

The Journal of the Indian Institute of Science is today a review journal, a one-of-its-kind in India. An enthusiastic editorial board with GK Ananthasuresh (Professor of Mechanical Engineering at IISc) at the helm is actively pursuing its publication activities and I am informed that the articles for the next couple of years of the Journal (Volumes 100 and 101) are already lined up.

But the Journal had a very different avatar when it began 105 years ago. When IISc was established over a century ago, its Council felt that the Institute should publish its own journal. In fact, at its meeting on 19 January 1914, the Council sanctioned an initial grant of Rs 1,000 (a very generous amount in those days!) to start the Journal, with a mandate to publish "scientific and technical" articles. The first set of 10 articles initially submitted to the Council cost 403 rupees, 13 annas and 3 paise to print. The first volume of the Journal containing 21 articles was published during the years 1914-1918. The first article in this volume, entitled "Borohydrates" was authored by Morris W Travers (the first Director of IISc), Rames Chandra Roy and Nalini Mohan Gupta. Volume 2, published over the next three years, contained 15 papers; volumes 3 and 4 contained 9 and 16 articles,

respectively. Since 1922, each year saw the publication of a single volume. In the early years of the Journal, the Director of the Institute served as the Chairman of its editorial board. Given IISc's British connections, they adopted the policies of the Royal Society's journals, with Section A of the Journal dedicated to chemistry and Section B meant for electrical engineering, as these were the two departments with which the Institute began functioning.

Researchers of our Institute felt that publishing in journals already established elsewhere would bring them more recognition

The Bangalore Press was involved in the Journal's publication during the 1930s and '40s, and the Institute's library was in charge of it from 1951 to 2007. In 1971, GN Ramachandran became the Journal's Editor with TKS Iyengar, the Institute's Librarian, as the Associate Editor. In 1974, Iyengar was appointed as the Executive Editor. Subsequently, several eminent researchers from the Institute donned the mantle of the Editor – N Mukunda, S Soundaranayagam, M Vijayan, SS Krishnamurthy and MS Shaila – while librarians NM Malwad and S Venkadesan served as Executive Editors. I must note here the contributions of K Srinivasa Rao, who served as an Assistant Editor for several years, doing literally everything from copyediting to producing the final print form of all the articles.



*The cover page of an issue of the Journal during its lean "yellow" period
(Image: IISc Archives)*

In this period, the Journal started including synopses of the PhD theses submitted by the students to the Institute and these turned out to be the major content of the volumes published. The Journal lost its identity as a consequence and went through a lean "yellow" period (yellow being the colour of the cover page during this time). During 1978-1992, the Journal went through many changes based on suggestions from the Director and the editorial board members. It became a monthly journal and, starting from 1978, each issue had a theme. In 1992, the Journal became a bi-monthly.

In 2003, LM Patnaik, then a professor in the Department of Computer Science and Automation, took over as the Editor, and he formed a new editorial board which apart from publishing the Journal online stopped publishing thesis synopses and made fresh efforts towards publishing peer-reviewed articles from the members of the Institute. I had the privilege of serving as a member of this editorial board and, with enormous efforts, we managed to publish a reasonable number of articles from the Institute faculty. The cover design as well as the layout of the Journal were redone, and the quality of the printing improved, too. However, very soon the initial excitement from the Institute's faculty diminished and it became very hard to get a sufficient number of papers to keep the quarterly publication of the Journal going.

At this juncture, in 2007, P Balaram, the then Director of the Institute, called a meeting of the editorial board and, after detailed discussions, suggested closing down the Journal. Even though Patnaik was to retire that year, the editorial board members were reluctant to stop a nearly 100-year-old journal. After several hours of deliberation, Balaram came up with the idea of remaking the Journal into its current avatar of a review journal. Such a review journal serves the important purpose of publishing reviews of selected research areas in a way accessible to researchers from different disciplines. A useful feature of these review articles are short explanatory notes, appearing in the margins, of terms that might be widely known to researchers within a particular field but not to those in other fields. The authors of review articles use their judgment to identify such terms and provide short explanations.

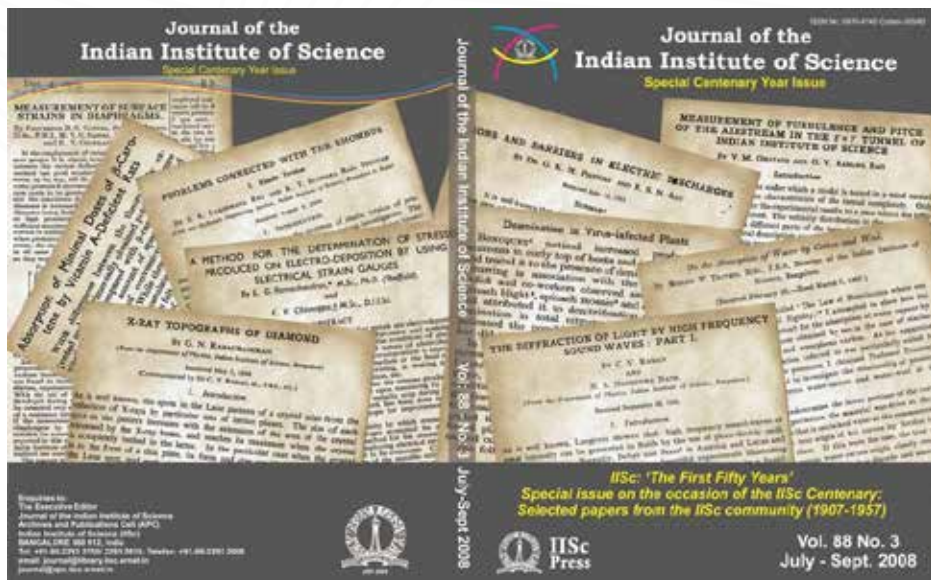


Cover page of the Journal's special issue commemorating Srinivasa Ramanujan's birth centenary in 1987 (Image: IISc Archives)

In 2008, a new committee was set up with myself as the Editor, and the Journal was moved to the Archives Cell, which was renamed the Archives and Publications Cell (now the Office of Communications). IIScPress was established as an entity within the Archives and Publications Cell, bringing all the Institute's publications under a single umbrella. In these changes, the efforts of AG Menon, the first Chair of the Archives and Publications Cell, were very helpful. After Srinivasa Rao's retirement, Kavitha Harish has been handling the publishing of the Journal as its Editorial Assistant since 2008.

Over the years, there have been a few special issues of the Journal published to commemorate important occasions. Thus, a special issue was published during the Golden Jubilee year of the Institute in 1959; one to commemorate the birth centenary of the mathematician Srinivasa Ramanujan in 1987 which carried, among other things, handwritten content from Ramanujan's notebook put together by KG Ramanathan; and one in 1988 to commemorate the birth centenary of CV Raman.

A special issue of the Journal commemorated the Institute's centenary year in 2009. It carried 100 landmark papers published by IISc researchers over the years in various other journals. In 2014, another special issue commemorated the centenary of the Journal, carrying selected original papers published in it over its first fifty years, from 1914 to 1964. These papers were selected for their historical as well as current scientific value.



Cover page of the Journal issue commemorating the Institute's centenary
(Image: IISc Archives)

Starting from 2017, the Journal entered a co-publishing arrangement with SpringerNature for an initial period of three years, facilitating its greater global reach. A new committee headed by GK Ananthasuresh as the Editor was set up in 2018 and, for the first time in the history of the Journal, its editorial board has members from outside the Institute. In 2020, the 100th volume of the Journal will be published, with the first issue on hydrogen bonding, being guest edited by E Arunan of the Department of Inorganic and Physical Chemistry. This is a fortunate coincidence, for 2020 will also mark 100 years of hydrogen bonding. May the Journal continue to be published for the next 100 years!

With inputs from Kavitha Harish

TN Guru Row is an Honorary Professor at the Solid State and Structural Chemistry Unit, and was the Editor of the Journal of the Indian Institute of Science from 2008 to 2018

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The People behind One Hundred Volumes

By G. K. Ananthasuresh

Remembering those who stood behind the Journal

Surviving 100 years and still staying relevant is an accomplishment. The Journal of the Indian Institute of Science has achieved this remarkable feat. Started in 1914, just five years after the Institute was founded, the Journal seems to have missed publication only three years (1940, 1982, and 1985), according to records available at the archives of the Office of Communications at IISc. All available issues have been scanned and made available on the Journal's website. In 2020, the Journal is issuing its 100th volume. Slight inconsistency in numbering the volumes is due to binding publications of different years in a single volume and splitting publications of the same year into different volumes, before the Journal started to number its volumes. Nonetheless, as we celebrate the release of the first issue of the 100th volume, it is important to remember all those who contributed to the Journal.

The thought of initiating a journal by those at the helm at the inception of the Institute was indeed visionary. In 1914, Prof. Morris Travers, the first Director of the Institute, wrote the very first paper as the first author describing the first part of the work that was done at the Institute on borohydrates. The second part of this work too was published in the same year. This issue also had the very first erratum of the Journal, correcting "hydroboron" as "borohydrate". Since then, many midcourse corrections have been made. The Journal has undergone every imaginable change a journal could possibly experience. Publishing a thriving journal in India had not been easy then and it is not easy even today.

It is apt to say the Journal of IISc is actually a journal by IISc or for IISc because, for many decades, the Journal served the purpose of disseminating research done in the Institute by its faculty and students. Occasionally, foreign visitors also published their work in the Institute. Therefore, the papers published in the Journal give us a flavor of the kind of research done in the Institute. It is thus an important source of information to learn about the Institute and its faculty and students. As we scan the papers, we cannot miss the fact that much of the research done in the Institute in its formative years was focused on locally relevant issues such as sandal oil, indigenous starch, proteins in Indian food, gas from the Indian oil wells, Indian medicinal plants, antimalarials, iron pyrites from Bihar, Mysore vermiculites, the development of chemical industries in India, and so on. In later years, there were detailed accounts of technologies developed in the Institute: wind tunnels, internal combustion engines, technical acoustics, microwave communications, etc. The Journal has also seen peer-reviewed articles by researchers outside IISc and India from late 1970s onwards.

During the first 42 years, the Director of the Institute served as the Chair of the Editorial Board. For the next 13 years, the Librarian of the Institute was in charge of the Journal. Regrettably, there is no record of the names of the editorial board members until 1973. An Editorial Board chaired by Prof. G. N. Ramachandran appears to be the first board with faculty of the Institute as its members. That has continued with several illustrious faculty of the Institute serving as editors and editorial board members. Past editors including G. N. Ramachandran, N. Mukunda, S. Soundaranayagam, M. Vijayan, S. S. Krishnamurthy, M. S. Shaila, L. M. Patnaik, and T. N. Guru Row nurtured the Journal. Librarians—T. K. S. Iyengar, P. R. Mahapatra, N. M. Malwad, S. Venkadesan—served as Executive Editors. K. Srinivasa Rao, who worked as an Assistant Editor from 1980 to 2006, recalls that he retrieved many original issues that were left unattended and got them scanned, bounded, and preserved. R. Geetha assisted the Journal in many ways during this period.

It is heartening to note that the Journal has celebrated important occasions of the Institute and renowned researchers of India. These include a golden jubilee volume when the Institute turned 50; reprinting significant papers published by Institute's people in the first 50 years as two volumes in 2008; a special centenary volume in 2009 that contained papers of historic value and contemporary relevance; and two commemorative issues on Srinivasa Ramanujan in 1987 and C. V. Raman in 1988 to celebrate their centenaries. The Journal has thus been a chronicle of the Institute's important events in addition to recording Institute's research.

The current form as the Multidisciplinary Reviews Journal owes it to the forethought of Prof. P. Balaram, former Director of IISc. It has paved the way to attract quality papers from outside the Institute and India. The format of every issue guest-edited by an expert of a chosen contemporary research theme ensures that the work gets distributed without being a burden for a few individuals. In 2007, the editorial board headed by Prof. L. M. Patnaik deftly handled the transition from a journal that published peer-reviewed research articles to review articles. Prof. T. N. Guru Row, as the editor-in-chief of the subsequent editorial board, skillfully formalized the procedures, enthused numerous faculty of the Institute to guest-edit the Journal, coordinated a co-publishing agreement with Springer, and helped establish the Journal as a unique review journal with a respectable impact factor. Ms. Kavitha Harish, as the Editorial Assistant, has been looking after all the nitty-gritty of administrative matters since 2007. The chairs of the Office of Communications (formerly Archives and Publications Cell), Profs. A. G. Menon, T. A. Abinandanan, and Kaushal Verma have provided unconditional support to the Journal. Prof. Anurag Kumar, like all the past Directors of the Institute, continues to advise and generously support the Journal. The current editorial board owes much to all

who have contributed their ideas and time in the last century. The contributions of many who worked behind the scenes remain anonymous. We are equally grateful to them.

Since 2007, the Journal has touched upon many multidisciplinary themes in various aspects of science, engineering, and technology. The next issue is on 5G communications and it will be published before that technology is launched. Subsequent issues focus on phenotypic plasticity, digital health, cytoskeletal mechanics, molecular ecology and wildlife conservation, analysis of complex systems, landfills, and so on. We strive to make each issue of the Journal a collector's item for the researchers in the field. With Springer as our co-publisher, we hope to grow the journal and expand its reach far and wide.

In a Harvard Business Review article, Hill, Mellon and Goddard (Sep. 27, 2018), after analyzing how things last 100 years, noted that entities that continue to exist for more than 100 years focus on getting better rather than growing bigger. They say: "They're radically traditional—with a stable core, but a disruptive edge. And that's what keeps them ahead." The Journal of IISc has gradually gotten better with most of its transformations. It did have a disruptive edge when it assumed the current form. Let us hope that it survives many centuries.

G. K. Ananthasuresh

Editor-in-chief, Journal of IISc

January 3, 2020

G. K. Ananthasuresh is Professor of Mechanical Engineering, and has become editor-in-chief of the Journal of the Indian Institute of Science since July 2018.

People at the helm of the Journal

Directors who served as the Chair of the Editorial Committee (1914-1972)

Morris W. Travers, Alfred Bourne, Martin O. Forster, M. S. Thacker, Jnan C. Ghosh, C. V. Raman, S. Bhagavantham, Satish Dhawan

Editorial Committee (1973-1974)

Editor: G. N. Ramachandran;

Associate Editor: T. K. S. Iyengar;

Members: R. Srinivasan, G. S. Krishna Rao, R. Chatterjee, P. Srinivasan

Editorial Committee (1974-1975)

Editor: G. N. Ramachandran;

Associate Editor: E. S. Raja Gopal;

Executive Editor: T. K. S. Iyengar

Members: R. Chatterjee, G. S. Krishna Rao, P. Srinivasan, R. Srinivasan, K. I. Vasu, K. B. Athreya, B. L. Deekshatulu, C. S. Vaidyanathan, D. S. Viswanath

Editorial Committee (1975-1977)

Editor: G. N. Ramachandran;

Associate Editor: E. S. Raja Gopal;

Executive Editor: T. K. S. Iyengar

Members: K. Chandrashekara, N. Mukunda, N. C. Patel, M. A. L. Thathachar, E. V. Krishna Murthy, G. Narasimhan, C. S. Vaidyanathan

Editorial Committee (1977-1978)

Editor: G. N. Ramachandran;

Associate Editor: N. Mukunda;

Executive Editor: T. K. S. Iyengar

Members: E. V. Krishna Murthy, G. Narasimhan, I. G. Sharma, C. S. Vaidyanathan, A. K. Rao, V. V. S. Sarma, K. P. Sinha, G. S. R. Subba Rao

Editorial Committee (1978-1979)

Editor: N. Mukunda;

Associate Editor: C. S. Vaidyanathan;

Executive Editor: T. K. S. Iyengar

Members: A. K. Rao, V. V. S. Sarma, K. P. Sinha, G. S. R. Subba Rao

Editorial Committee (1979-1982)

Editor: N. Mukunda;

Associate Editor: C. S. Vaidyanathan;

Executive Editor: T. K. S. Iyengar

Members: S. M. Deshpande, R. Narasimha, A. K. Rao, V. V. S. Sarma, D. P. Sengupta, H. Sharat Chandra, K. P. Sinha, G. S. R. Subba Rao

Editorial Committee (1983-1985)

Editor: S. Soundranayagam;

Associate Editor: M. Vijayan;

Executive Editor: T. K. S. Iyengar;

Scientific Assistant (Editorial): K. Srinivasa Rao

Members: K. T. S. Iyengar, H. S. Mukunda, V. R. Pai Verneker, B. S. Sonde, D. K. Subramanian, C. S. Vaidyanathan, R. Vittal Rao

Editorial Committee (1986-1988)

Editor: S. Soundranayagam;

Associate Editor: M. Vijayan;

Executive Editor: T. K. S. Iyengar;

Technical Officer (Editorial): K. Srinivasa Rao

Members: T. R. Kasturi, N. Kumar, R. Narayana Iyengar, G. Nath, V. Rajaraman, G. Ramachandra Rao, G. N. V. Rao, K. J. Rao, M. A. L. Thathachar

Editorial Committee (1988-1992)

Editor: M. Vijayan;

Associate Editor: R. Narayana Iyengar;

Executive Editor: P. R. Mahapatra;

Technical Officer (Editorial): K. Srinivasa Rao

Members: Anil Kumar, R. K. Kaul, S. S. Krishnamurthy, B. G. Raghavendra, M. R. S. Rao, A. P. Shivaprasad, J. Srinivasan, N. Viswanadham, R. Vittal Rao

Editorial Committee (1993-1994)

Editor: S. S. Krishna Murthy;

Associate Editor: R. Anurag Kumar;

Executive Editor: N. M. Malwad;

Technical Officer (Editorial): K. Srinivasa Rao

Members: K. B. Akhilesh, V. S. Borkar, V. Najundaiah, Phoolan Prasad, Priti Shankar C. Ramakrishnan, H. S. Savithri, A. K. Sood, K. S. Subba Rao

Editorial Committee (1995-2001)

Editor: M. S. Shaila;

Associate Editor: V. S. Borkar;

Executive Editor: N. M. Malwad;

Assistant Editor: K. Srinivasa Rao

Members: K. B. Akhilesh, V. Najundaiah, Phoolan Prasad, Priti Shankar, C. Ramakrishnan H. S. Savithri, A. K. Sood, K. S. Subba Rao

Editorial Committee (2002-2007)

Editor: L. M. Patnaik;

Associate Editor: T. N. Guru Row;

Executive Editor: P. Venkataram

Assistant Editor: K. Srinivasa Rao

Members: Thomas Chacko, A. Chakrabarti, K. Gopakumar, N. V. Joshi, K. P. J. Reddy K. L. Sebastian, L. Umanand

Editorial Board (2008-2018)

Editor-in-chief: T. N. Guru Row;

Executive Editors: S. Venkadesan, A. G. Menon, T. A. Abinandanan;

Editorial Assistant: Kavitha Harish

Members: Vasanth Natarajan, M. S. Shaila, Debasish Ghose, G. K. Ananthasuresh S. Asokan, Renee M. Borges, K. J. Vinoy

Editorial Board (2018-present)

Editor-in-chief: G. K. Ananthasuresh;

Executive Editor: Kaushal Verma

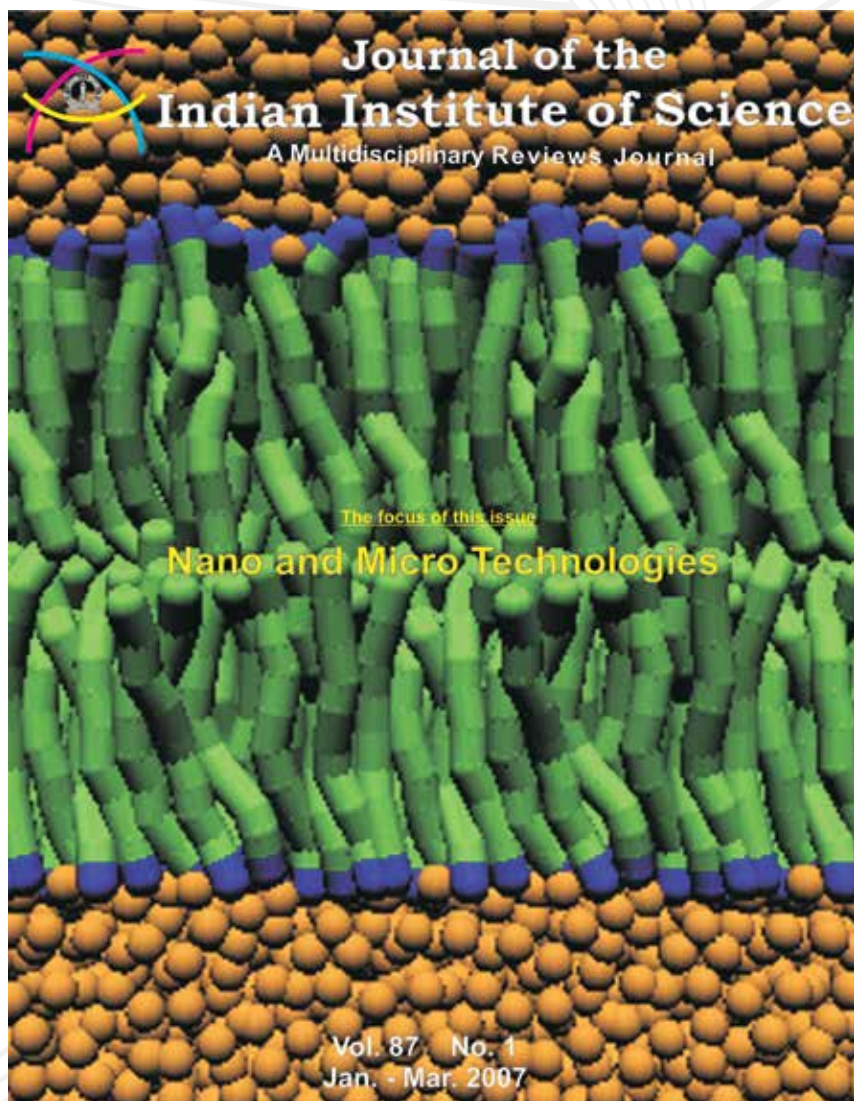
Editorial Assistant: Kavitha Harish

Members: E. Arunan, Rashna Bhandari, Madhavi Latha Gali, Anil Kumar, Prabal Maiti, Biman B. Mandal, Sanjay P. Sane, Aravind Srinivasan, Rajesh Sundaresan, Gaurav Tomar

Themes of the past and the forthcoming issues

Year	Vol. Issue	Theme of the issue	Guest Editor(s)
2007	87•1	Nano and Micro Technologies	G. K. Ananthasuresh
	87•2	Recent Trends in Crystallography Research: The Indian Scenario	T. N. Guru Row
	87•3	Micro and Nano Technologies	G. K. Ananthasuresh
	87•4	Recent Developments in Mathematical Sciences	G. Rangarajan
2008	88•1	Biological Engineering	G. K. Ananthasuresh
	88•2	Recent Trends in Crystallography Research: The Indian Scenario - 2	T. N. Guru Row
	88•3	IISc: 'The first fifty years' – special issue on the occasion of the	
	88•4	IISc centenary: selected 100 papers from the IISc community (1907 – 1957) Special committee of senior faculty of IISc	
2009	89•1	Nanostructured Materials	Vikram Jayaram
	89•2	Liquid Crystals	N. Jayaraman and Kattera A. Suresh
	89•3	Quantum Computation – Current Trends and Implementations	Vasanth Natarajan and Anil Kumar
	89•4	Advanced Electrochemical Power Systems	K. Shukla
2010	90•1	Recent Developments and Applications of NMR Spectroscopy	N. Suryaprakash
	90•2	Catalysis at Interface	M. S. Hegde and S. Vasudevan
	90•3	Advances in Electrical Sciences	K. J. Vinoy
	90•4	Climate Change: Challenges and Opportunities for India	Raghuram Murtugudde and Debasis Sengupta
2011	91•1	Algebra and its Applications	Dilip P. Patil
	91•2	Physics and Applications of Amorphous Semiconductors – Recent Advances	S. Asokan
	91•3	Bio-Fluid Mechanics	Jaywant H. Arakeri
	91•4	Chemical Biology and Drug Discovery	G. Mugesh
2012	92•1	Biomass and Energy Technologies for Sustainable Development	H. N. Chanakya and B. V. Venkatarama Reddy
	92•2	Advances in Nanomedicine – Nanobiotechnology	Ambarish Ghosh
	92•3	Cancer Enigma: Concepts, Challenges and Prospects	Patutu Kondaiah
	92•4	Development and Disorders of the Nervous System	Shyamla Mani
2013	93•1	Imaging and Microscopy	Gopalkrishna Hegde
	93•2	Water Management in Changing Environment	M. S. Mohan Kumar
	93•3	Cyber Physical Systems	Bharadwaj Amrutur
	93•4	High-performance Advanced Composites	S. Gopalakrishnan
2014	94•1	Crystals and Crystallography: From Koh-I-Noor to IYCR2014	B. Gopal and T. N. Guru Row
	94•2	Cold Atom Quantum Emulators: From Condensed Matter to Field Theory to Optical Clocks	Vasant Natarajan and Vijay B. Shenoy
	94•3	Fiber Optic Sensors and Applications	S. Asokan
	94•4	Magnetic Resonance Spectroscopy and Imaging	Hanudatta S. Atreya
2015	95•1	Plant Volatiles: Chemistry, Ecology and Evolution	Renee M. Borges
	95•2	Aspects on Crustal Evolution and Geochronology	Sajeev Krishnan and George Paul Mathews
	95•3	Advances in Composite Materials for Structural Applications	Makarand Joshi
	95•4	Design Science: Theories, Methods and Tools	Amaresh Chakrabarti

Year	Vol. Issue	Theme of the issue	Guest Editor(s)
2016	96•1	Advances in Flow Diagnostics	G. Jagadeesh and Gopalkrishna Hegde
	96•2	Transport in Mesoscopic Systems	Aveek Bid and Anindya Das
	96•3	Phase-Field Methods for pattern-Formation	Abhik Choudhury, Rajdip Mukherjee and Saswata Bhattacharyya
	96•4	Materials Electrochemistry, Electrochemical Processes and Systems	Aninda Jiban Bhattacharyya
2017	97•1	Signaling across Space and Time	Sandhya S. Visweswariah
	97•2	Crystallography as a Probe of Structure and Function	Gautam R. Desiraju
	97•3	Applied Computational Science and Engineering	Phaneendra K. Yalavarthy
	97•4	Brain and Cognition	Aditya Murthy
2018	98•1	Immunoengineering: From Biologics to Biomaterials	Siddharth Jhunjunwala
	98•2	Microfluidics-Theory and Applications	Suman Chakraborty, Aloke Kumar and Prosenjit Sen
	98•3	Recent Advances in Structural Biology	Sumanth Dutta and Tanweer Hussain
	98•4	The Puzzling Earth	M. Santosh and Sajeev Krishnan
2019	99•1	Transport Process in Droplets: Fundamentals to Applications	Saptarshi Basu
	99•2	Recent Advances in Machine Learning	Chiranjib Bhattacharya
	99•3	Contemporary Advances in Biomaterials and Bioengineering	Bikramjit Basu and Debrupa Lahiri
	99•4	Transportation Research	Abdul Rawoof Pinjari
2020	100•1	Hydrogen Bonding	E. Arunan
	100•2	5 G and Beyond	Rajesh Sundaresan and Chandra Murthy
	100•3	Phenotypic Plasticity	Mohit Kumar Jolly, Team of Indo-Australian Researchers
	100•4	Digital Health	Vijay Chandru, et al.
2021	101•1	Cytoskeletal Mechanics and Motor Proteins	Vaishnavi Ananthanarayanan
	101•2	Molecular Ecology and Wildlife Conservation	Uma Ramakrishnan
	101•3	Emerging Trends in Modeling and Analysis of Complex Systems	S S Ravi, Anil Vullikanti and Abhijin Adiga
	101•4	Landfills	Krishna R. Reddy and Sivakumar Babu

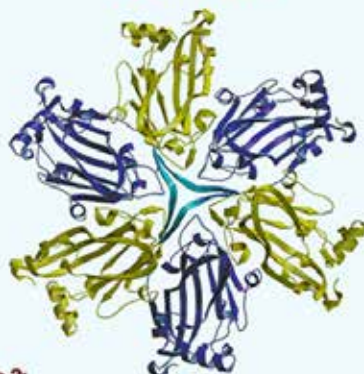
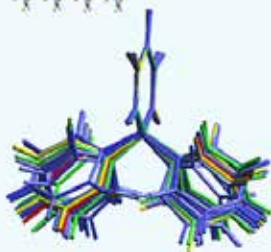
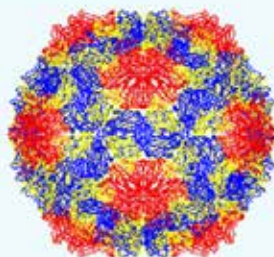
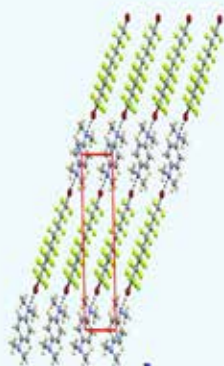


Guest Editor:
G. K. Ananthasuresh



Journal of the **Indian Institute of Science**

A Multidisciplinary Reviews Journal



Vol.87 No.2;
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**"Recent trends in crystallographic research:
The Indian Scenario"**

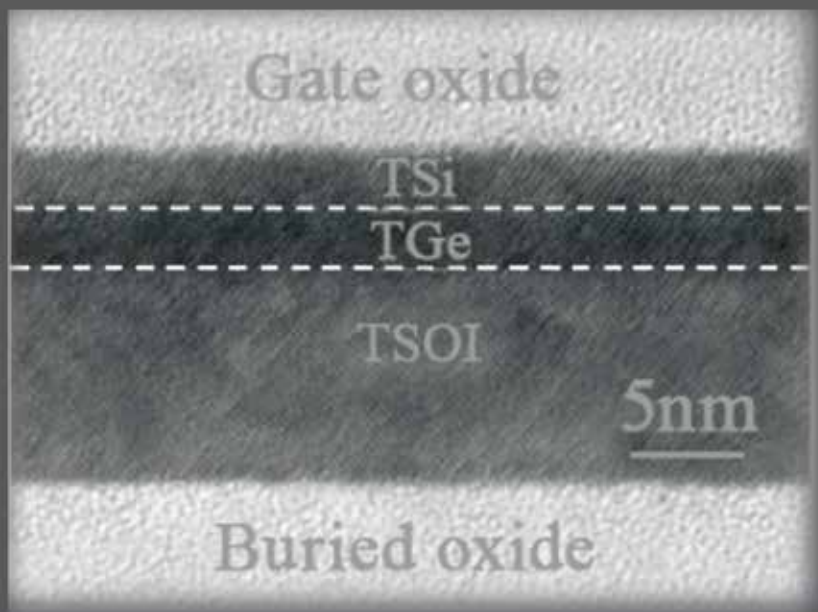
Guest Editor:
T. N. Guru Row



Journal of the Indian Institute of Science

A Multidisciplinary Reviews Journal

Micro and Nano Technologies



Vol. 87 No. 3
July - Sep. 2007

Guest Editor:
G. K. Ananthasuresh

ISSN No: 0970-4140 Coden: JIISAD



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A Multidisciplinary Reviews Journal

Recent Developments
in
Mathematical Sciences



Vol. 87 No. 4
Oct. - Dec. 2007

Guest Editor:
G. Rangarajan

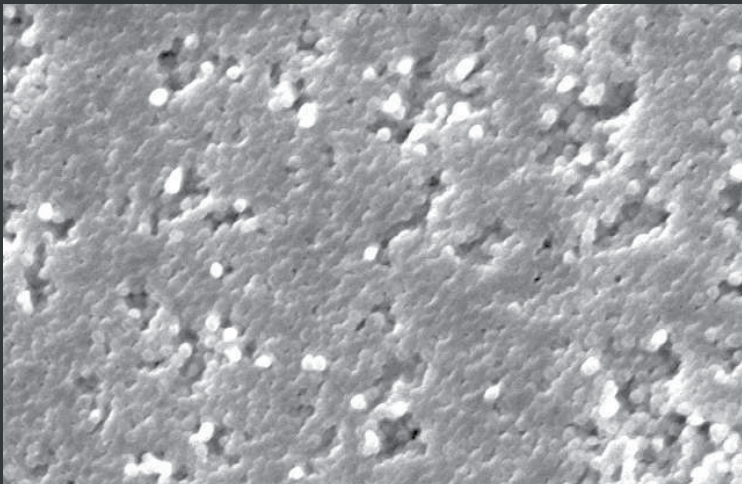
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Biological Engineering



15kV

X3,500

5µm

17 24 SEI

Vol. 88 No. 1
Jan. - Mar. 2008

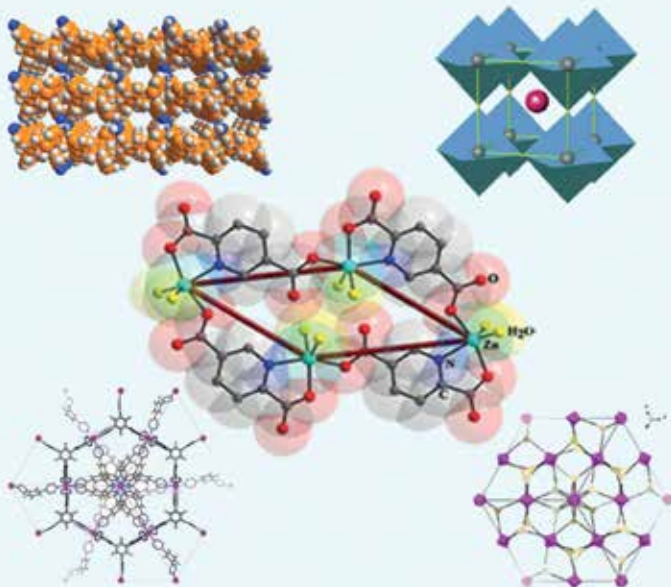
Guest Editor:
Jayant M. Modak

ISSN No:0970-4140 Coden-JIISAD



Journal of the **Indian Institute of Science**

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Vol. 88 No.2
April - June 2008



**"Recent trends in crystallographic research:
The Indian Scenario"- II**

Guest Editor:
T. N. Guru Row

Special Centenary Year Issue

DEC 2 1944

By PROFESSOR B. C. CARTER, Sc.
D.Sc., F.N.I., M. V. C. SATHI,
and K. V. CHINNAPPA

In the employment of intra-artery gauges it is almost inevitable that the central deflected method has good sensitivity, up to, say, 100 lb. mm. pressure is increased now needs to be greater and the maximum deflection diameter is increased diameter being little at high pressure sufficient accuracy correct to within 1 mm. when A-rats strain, the same in all cases as they are

employed and
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would produce
7 per cent.
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and low 1

By S. K. LAKSHMANA RAO AND
(Civil and Hydraulic Engineering Section, Indian Institute of Technology, Madras)

A METHOD FOR THE DETERMINATION OF STRESS PRODUCED ON ELECTRO-DEPOSITION BY USING ELECTRICAL STRAIN GAUGES

By E. G. Ramachandran,* M.Sc., Ph.D. (Sheffield)
and
K. V. Chinnappa,† M.Sc., D.I.I.Sc.

BY G. N. RAMACHANDRAN
(From the Department of Physics, Indian Institute of Science, Bangalore)
Received 24

(Communicated by Sir C. V. Raman, Kt., F.R.S., N.I.)

1. Introduction

As is well known, the spots in the Laue pattern of a crystal arise from the reflection of X-rays by particular sets of lattice planes. The size of each spot in the pattern increases with the extension of the area of the crystal traversed by the X-ray beam, and reaches its maximum when the crystal is completely bathed in the latter. In the particular case when the crystal is in the form of a thin plate, its form and size must be such that the Laue spot, and each

metals are electrodeposited under compressive and sometimes tensile conditions of plating. The nature of electrodeposition is important in the intermediate or the final forming, in making up the part, etc.

ductility by which stresses are prompted the method for the determination employing electrical strain gauges to be overcome. C. of the metallic strain

Enquiries to:
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Indian Institute of Science (IISc)
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1999-2000



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Special Centenary Year Issue

IONS AND BARRIERS IN ELECTRIC DISCHARGES
BY DR. G. K. M. PFESTORF AND R. S. N. RAU
Received July 13, 1953
SUMMARY

Deamination in Virus-infected Plants

BONCQUET¹ noticed increased ammonia in curly top of beets and traced it to the presence of denitrification in association with the blight and co-workers observed similar blight², spinach mosaic³ and attributed it to denitrification. Denitrification in total nitrogen indicated the possibility of denitrification.

MEASUREMENT OF TURBULENCE AND PITCH OF THE AIRSTREAM IN THE 5' x 7' TUNNEL OF INDIAN INSTITUTE OF SCIENCE

BY V. M. GHATGE AND G. V. RAMANA RAO

Introduction

is under which a model is tested in a wind tunnel, the characteristics of the tunnel completely. Only the experimental results to a case where the influence of the velocity distribution in the tunnel is different parts of the tunnel. A general description of the tunnel is given in this paper.

On the Absorption of Water by Cotton and Wool
By MORRIS W. TRAVERS, D.Sc., F.R.S., Director of the Indian Institute of Science, Bangalore.
(Received February 25,—Read March 7, 1907.)

THE DIFFRACTION OF LIGHT BY HIGH FREQUENCY SOUND WAVES: PART I.

BY C. V. RAMAN
AND
N. S. NAGENDRA NATH.
(From the Department of Physics, Indian Institute of Science, Bangalore.)
Received September 28, 1935.

1. Introduction.

As is well known, Langevin showed that high frequency sound-waves of great intensity can be generated in fluids by the use of piezo-electric oscillators. Recently, Debye and Sears¹ in America and Lucas and his co-workers² in England have made beautiful experiments illustrating the diffraction of light by sound in a liquid.

titled "The Law of Distribution where one has a rigid body." I attempted to show how the law of distribution of water vapour by sound is obtained by me in the case of similar experiments. As the apparatus used was particularly suited to low pressures, I obtained Professor Trouton's permission to investigate the relationship of pressure and temperature in water-cotton and water-wool at the

determine the lower portions of the curve. In the experiments the material was dried at the commencement that it contained water at the commencement of his curves lay further to the true origin of his curves, the true origin of his curves lay further to the true origin of his curves. If this were the case, the true origin of his curves lay further to the true origin of his curves. If this were the case, the true origin of his curves lay further to the true origin of his curves.



**IISc
Press**

**Vol. 88 No. 3
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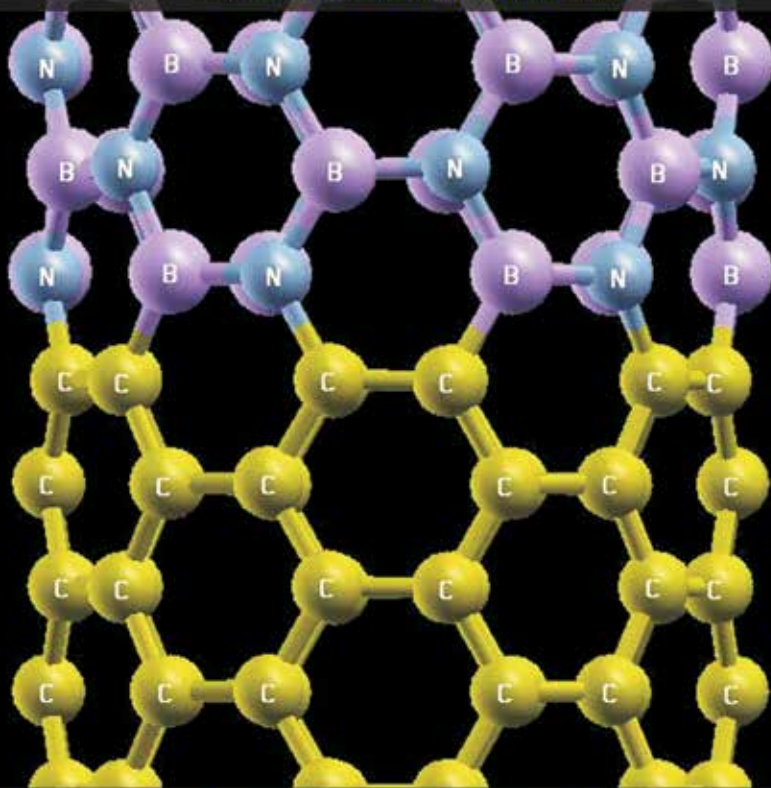
Guest Editors:
Special committee of senior faculty of IISc



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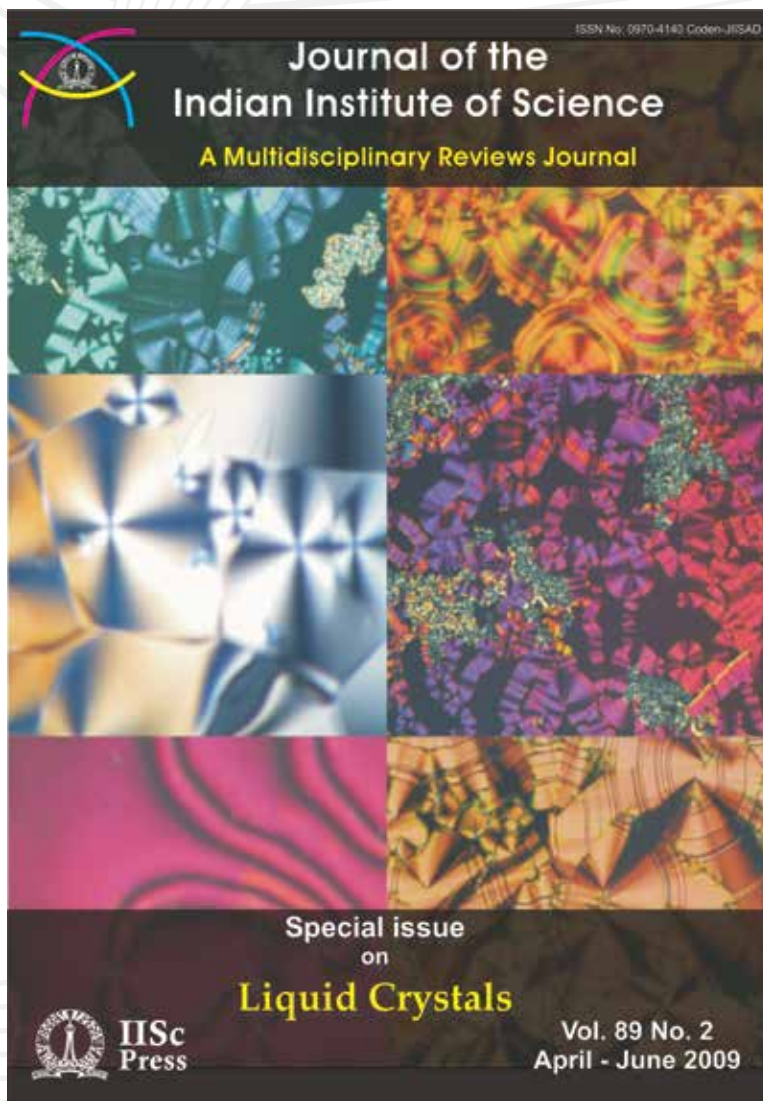
Nanostructured Materials



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Vol. 89 No. 1
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Guest Editor:
Vikram Jayaram



Guest Editors:

N. Jayaraman and Kattera A. Suresh



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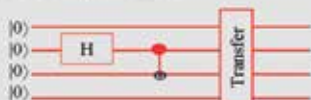
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Quantum Computation - Current trends and implementations

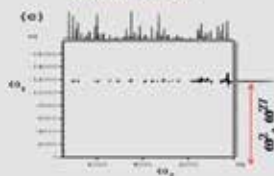
ENTANGLEMENT TRANSFER

Starting from 4-qubit PPS
prepared by SALLT :

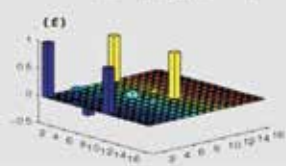
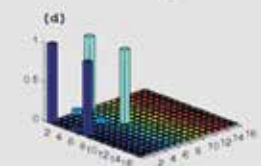
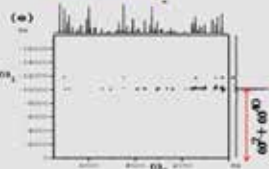


Entanglement between 2nd and 3rd qubit
 $|0000\rangle + |0110\rangle$

Entanglement between 1st and 4th qubit
 $|0000\rangle + |1001\rangle$



$$\begin{matrix} (\pi)^{27}(\pi)^{40} \\ (\pi)^{27} \end{matrix} \rightarrow$$



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Guest Editors:

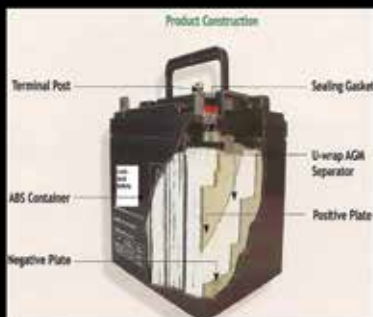
Vasanth Natarajan and Anil Kumar



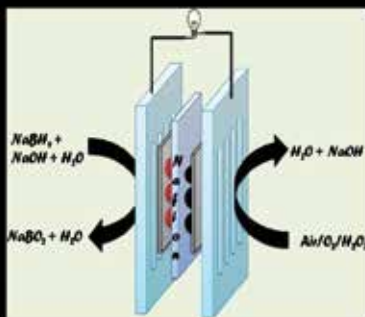
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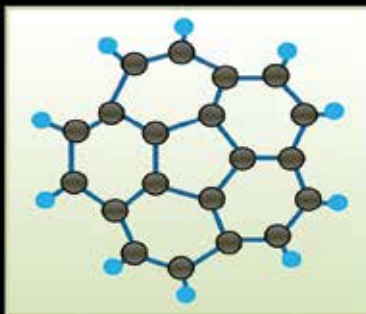
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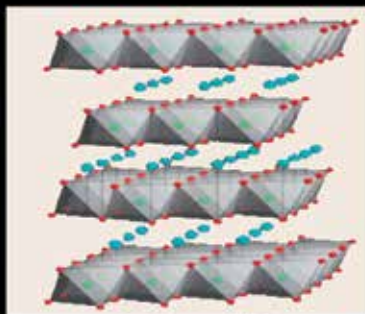
Lead-Acid Battery



Schematic Diagram of DBFC



3-Dimensional Structure of Corannulene



Crystal Structure of LiCoO_2

Advanced Electrochemical Power Systems



IISc
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Vol. 89 No. 4
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Guest Editor:
A. K. Shukla

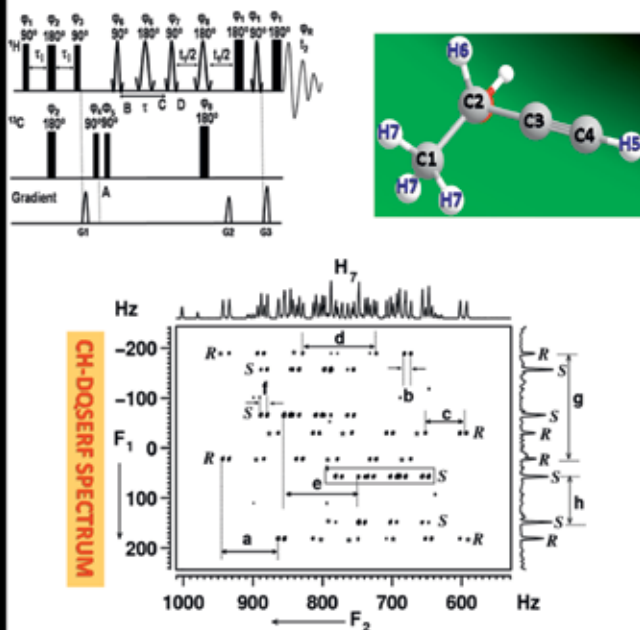


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Chiral Discrimination using ^1H NMR



Recent Developments and Applications of NMR Spectroscopy



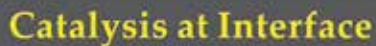
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Jan. - Mar. 2010

Guest Editor:
N. Suryaprakash



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Vol. 90 No. 2
April - June 2010

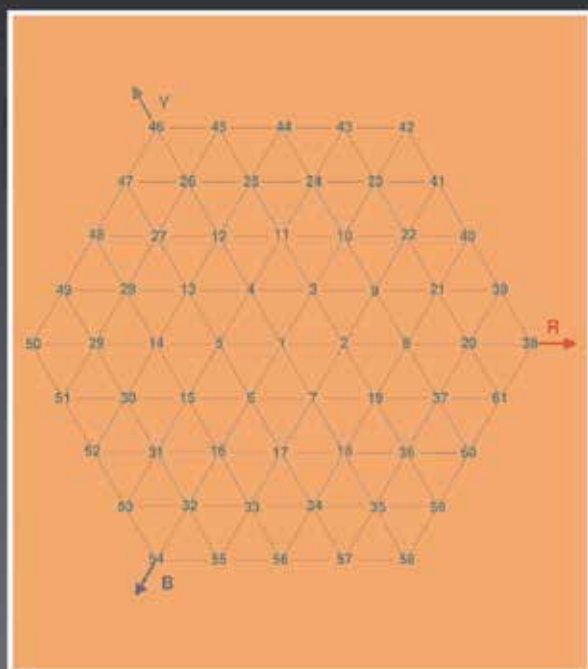
Guest Editors:

M. S. Hegde and S. Vasudevan



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Special Issue on Advances in Electrical Sciences



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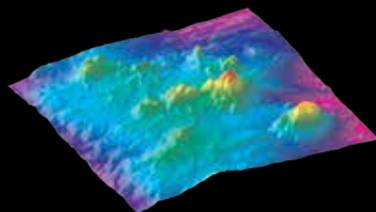
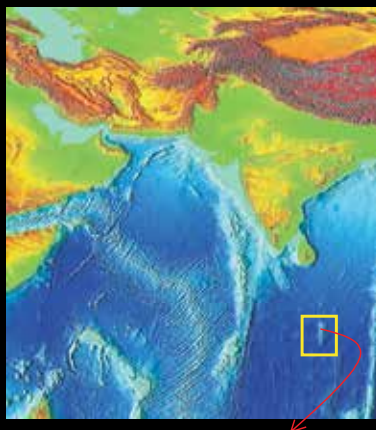
Guest Editor:
K. J. Vinoy

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Climate Change: Challenges
and Opportunities for India



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Raghuram Murtugudde and Debasis Sengupta

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$$\left(\frac{a}{p}\right) \equiv a^{(p-1)/2} \pmod{p}$$

SPECIAL ISSUE ON

ALGEBRA AND ITS APPLICATIONS



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Jan. - March. 2011**

Guest Editor:

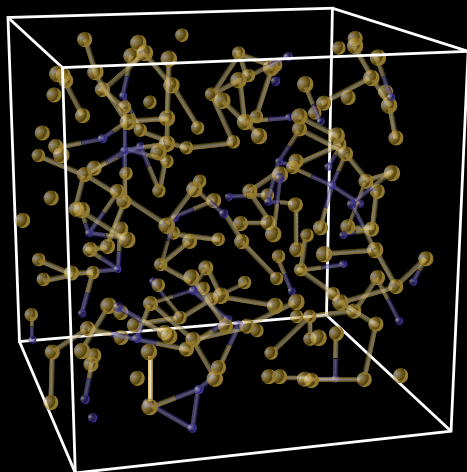
Dilip P. Patil

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● Te
● Ge

Physics and Applications of Amorphous
Semiconductors – Recent Advances



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Guest Editor:
S. Asokan

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Bio-fluid Mechanics



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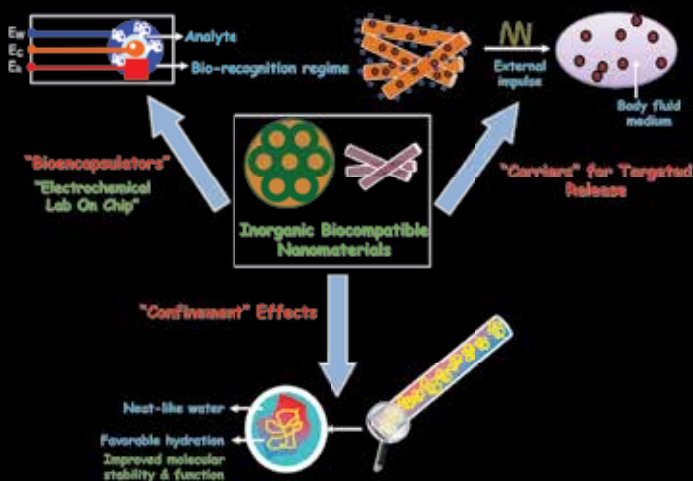
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Guest Editor:
Jaywant H. Arakeri



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Chemical Biology and Drug Discovery



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Guest Editor:
G. Mugesh

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Biomass and Energy Technologies for Sustainable Development



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**Vol.92 No.1
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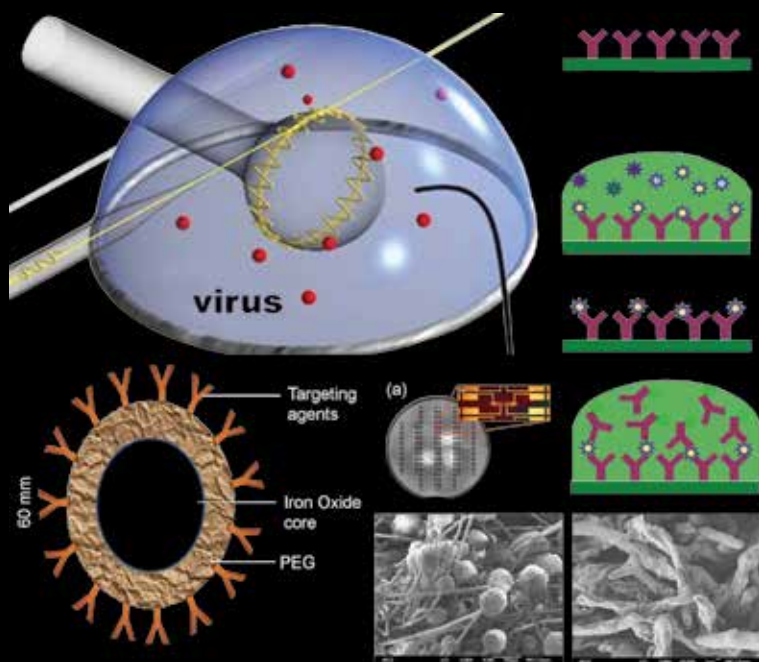
Guest Editors:

H. N. Chanakya and B. V. Venkatarama Reddy



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Nanobiotechnology



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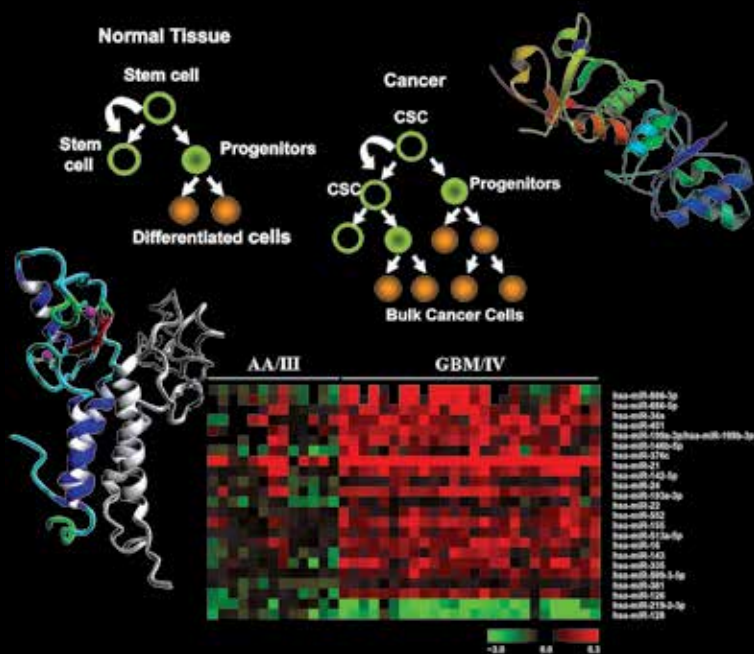
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Ambarish Ghosh



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Cancer Enigma: Concepts, Challenges and Prospects



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Paturu Kondaiah



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Development and Disorders of the Nervous System



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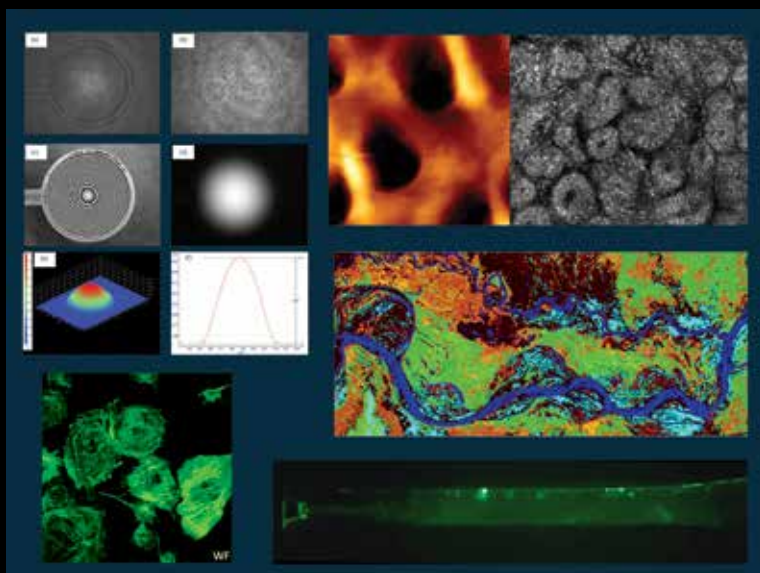
Vol.92 No.4
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Shyamala Mani



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Special Issue on Imaging and Microscopy



**IISc
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**Vol.93 No.1
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Guest Editor:
Gopalkrishna Hegde



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Water Management in Changing Environment



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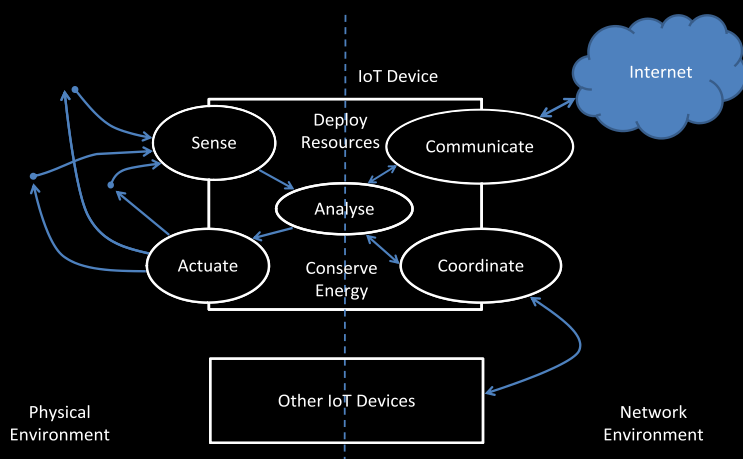
Vol.93 No.2
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M. S. Mohan Kumar



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Cyber Physical Systems



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**Vol.93 No.3
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Guest Editor:
Bharadwaj Amrutur



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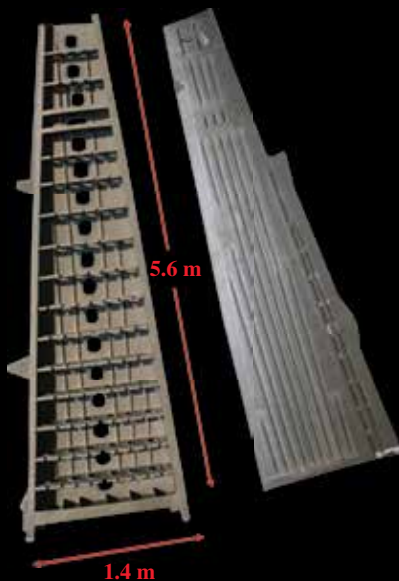
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SARAS Light Transport Aircraft (LTA)
by CSIR-National Aerospace Laboratories



Preform Assembly of Outboard Bottom Skin



High Performance Advanced Composites



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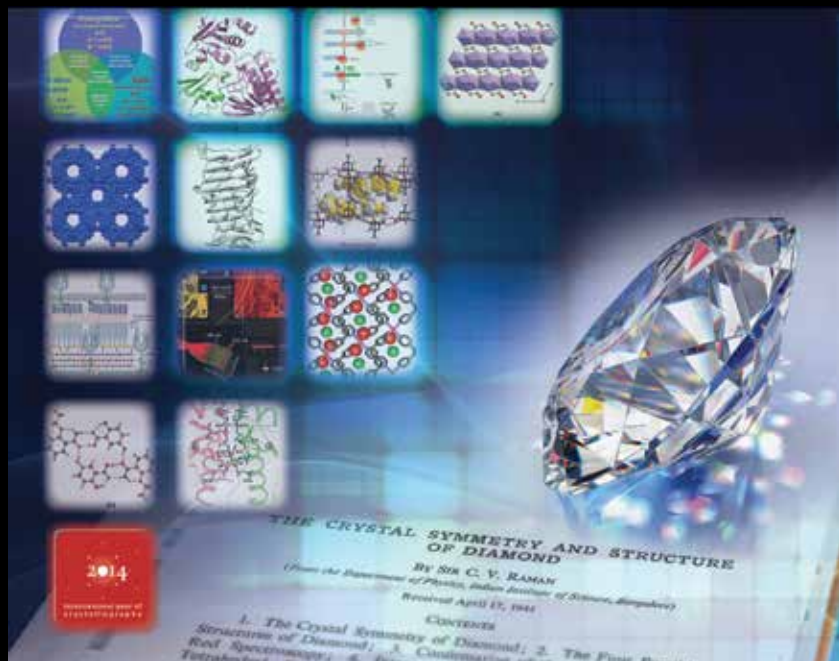
**Vol.93 No.4
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S. Gopalakrishnan



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A special issue on
"Crystals and Crystallography: From Koh-i-Noor to IYCr2014"



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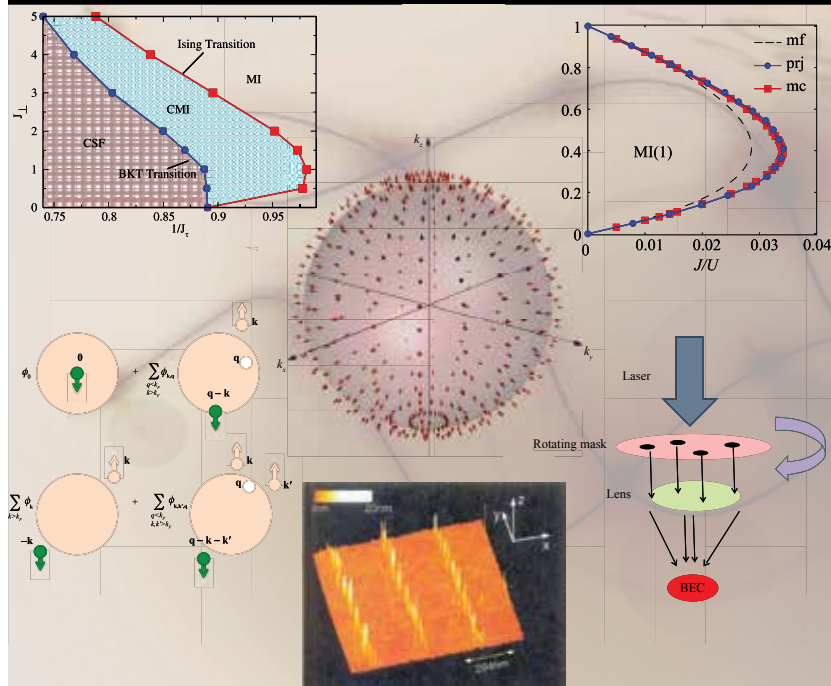
Guest Editors:

B. Gopal and T. N. Guru Row



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**Cold Atom Quantum Emulators: From Condensed
Matter to Field Theory to Optical Clocks**



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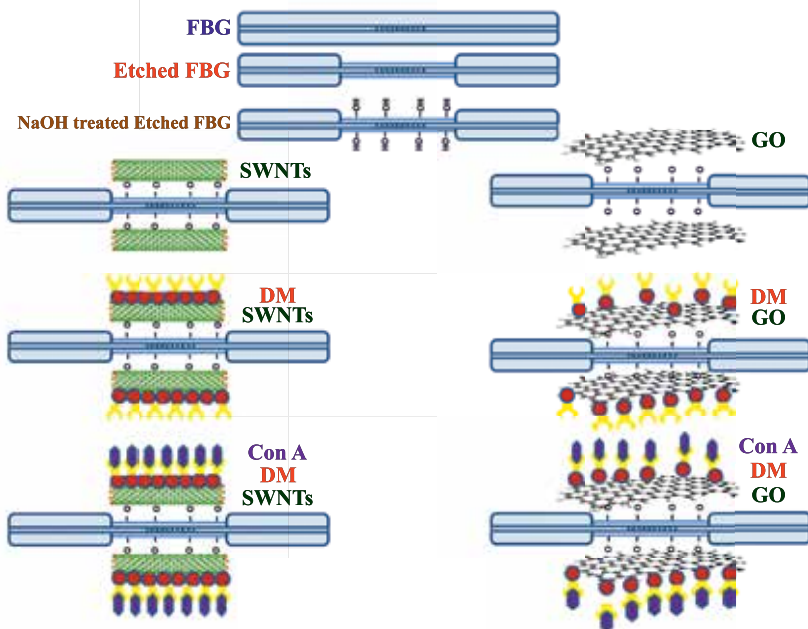
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Vasant Natarajan and Vijay B. Shenoy



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Fiber Optic Sensors and Applications



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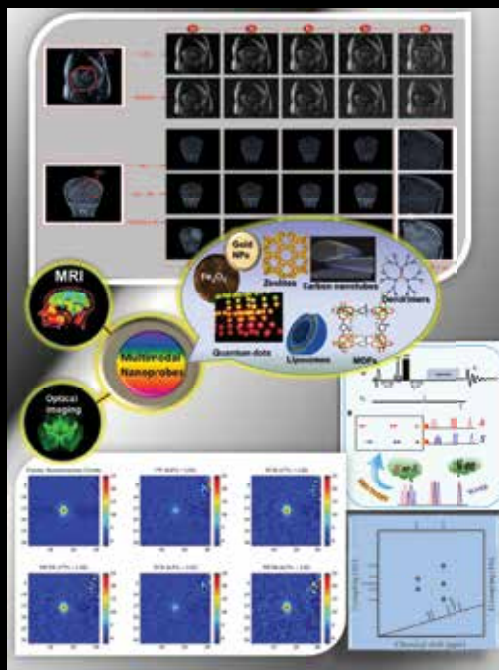
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S. Asokan



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Magnetic Resonance Spectroscopy and Imaging



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Guest Editor:
Hanudatta S. Atreya





Special Commemorative Centenary Issue

1914-2014

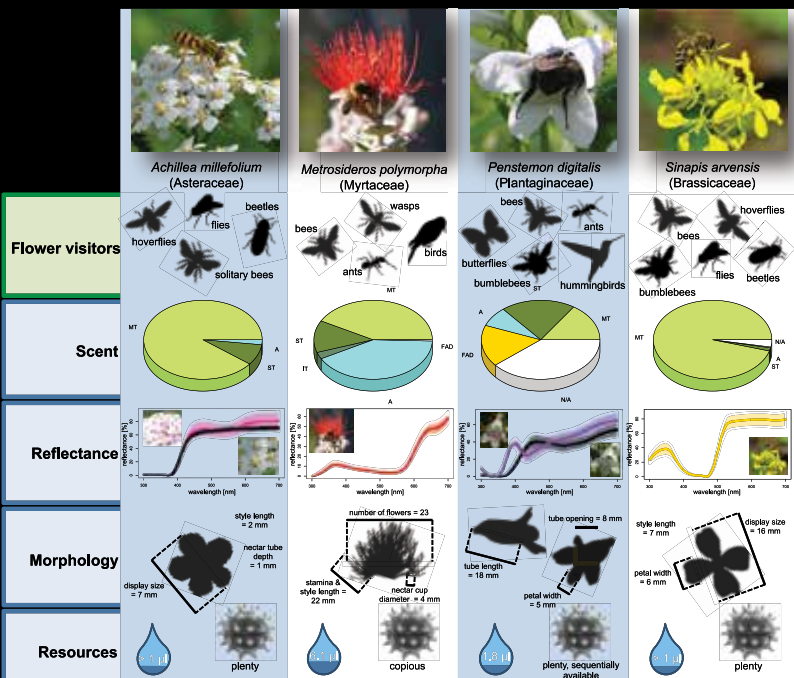


Guest Editors:
Journal Committee members



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Plant Volatiles: Chemistry, Ecology and Evolution



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Guest Editor:
Renee M. Borges



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Aspects on Crustal Evolution and Geochronology



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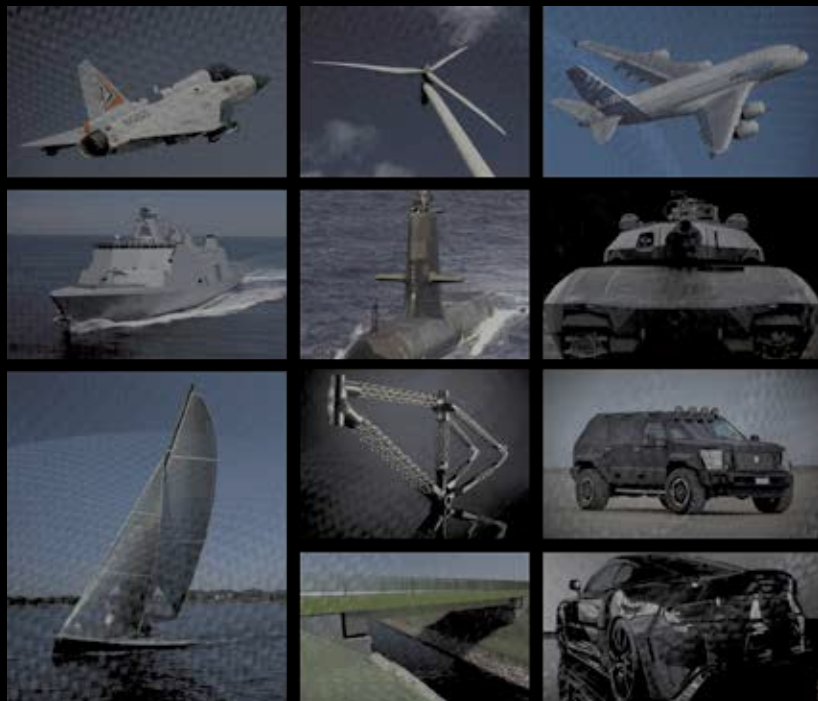
Guest Editors:

Sajeev Krishnan and George Paul Mathews



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Advances in Composite Materials for Structural Applications



**IISc
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**Vol.95 No.3
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Guest Editor:
Makarand Joshi



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Design Science: Theories, Methods and Tools



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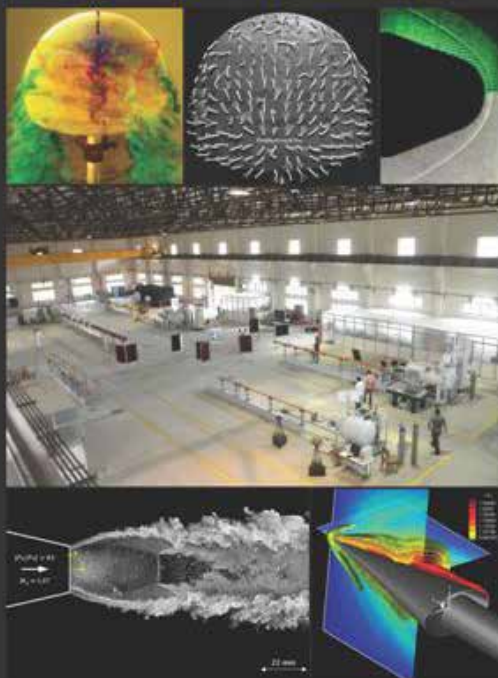
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Guest Editor:
Amaresh Chakrabarti



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Advances in Flow Diagnostics



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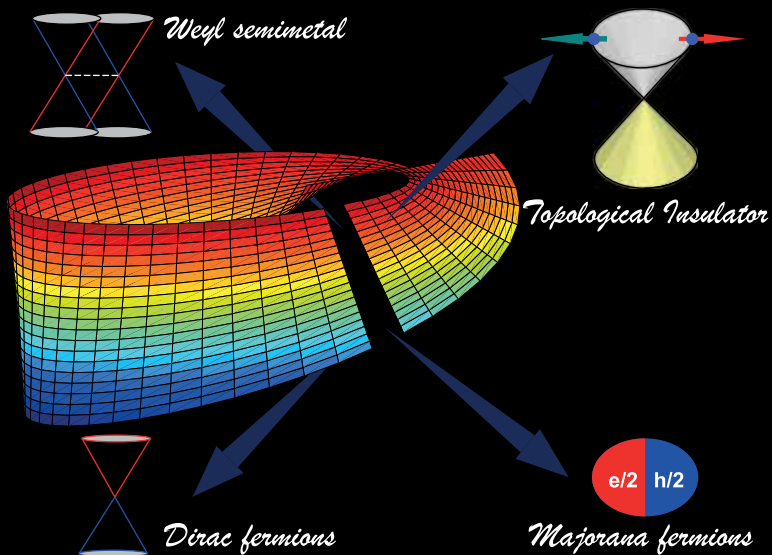
Guest Editors:

G. Jagadeesh and Gopalkrishna Hegde



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Transport in Mesoscopic Systems



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Guest Editors:

Aveek Bid and Anindya Das

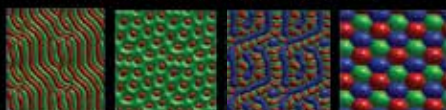


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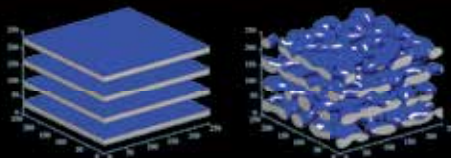
Temporal evolution of spinodal microstructure



Two and three-phase eutectic microstructural cross-sections



Morphological Instabilities during single-phase and two-phase solidification



Break-up of multi-layer thin-films due to mechanical instabilities

Phase-Field Methods for Pattern-Formation



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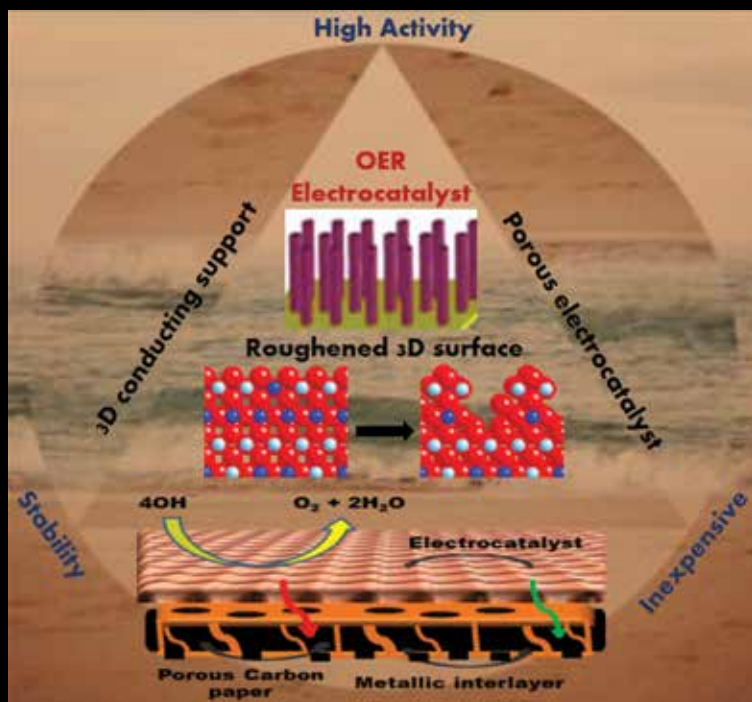
Guest Editors:

Abhik Choudhury, Rajdip Mukherjee and Saswata Bhattacharyya



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Materials Electrochemistry, Electrochemical
Processes and Systems



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Oct.-Dec. 2016

Guest Editor:

Aninda Jiban Bhattacharyya

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Signalling Across Space and Time



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 Springer

Guest Editor:
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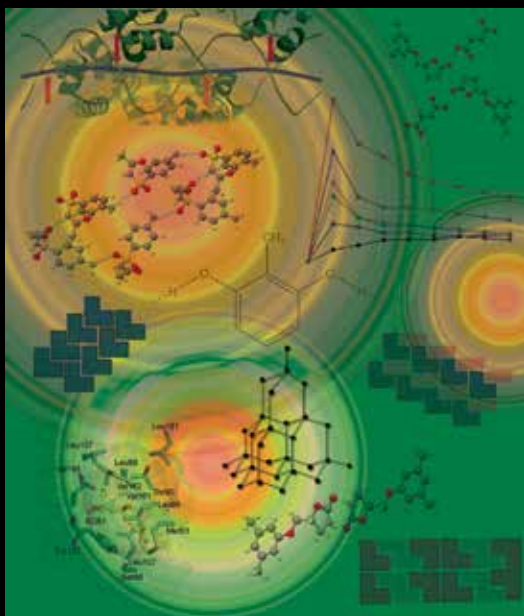
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Crystallography as a Probe of Structure and Function



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Springer

Guest Editor:
Gautam R. Desiraju

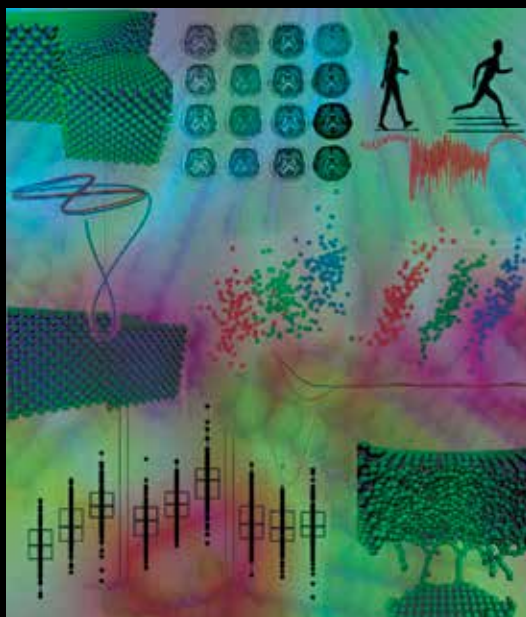
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Computational Science and Engineering: Major Research/Impacting Topics



 Springer

Guest Editor:
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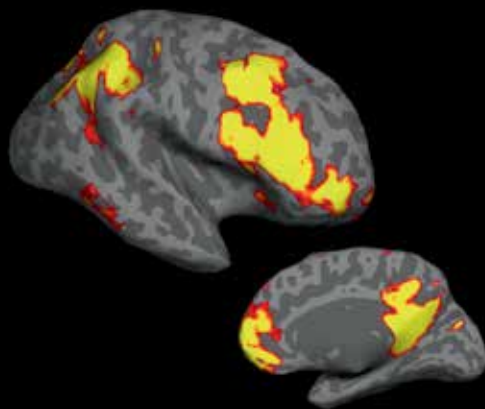
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Brain Regions Involved in Attention



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Guest Editor:
Aditya Murthy

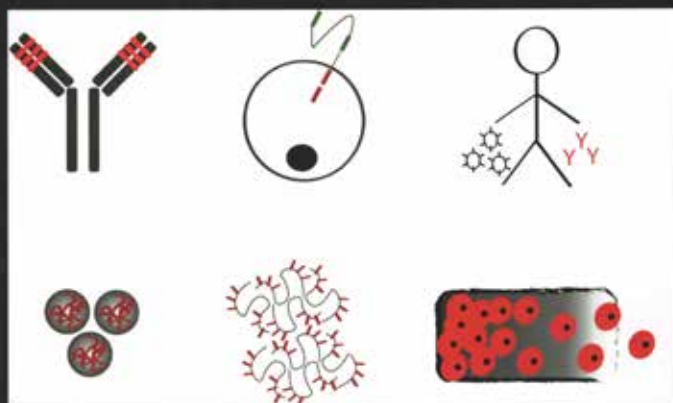
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Immunoengineering—From Biologics to Biomaterials



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Guest Editor:
Siddharth Jhunjunwala

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Microfluidics - Theory and Applications



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Springer

Guest Editors:

Suman Chakraborty, Alope Kumar and Prosenjit Sen

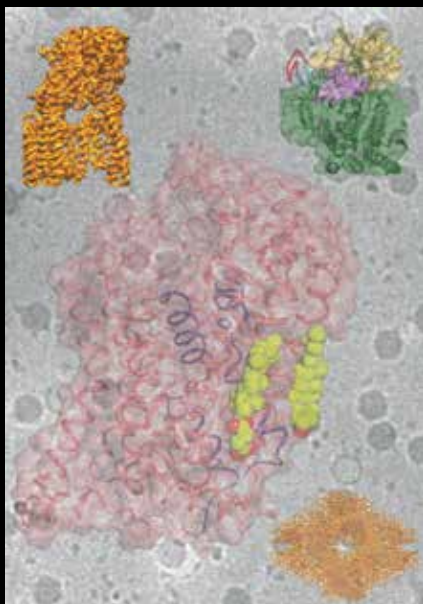
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Recent Advances in Structural Biology



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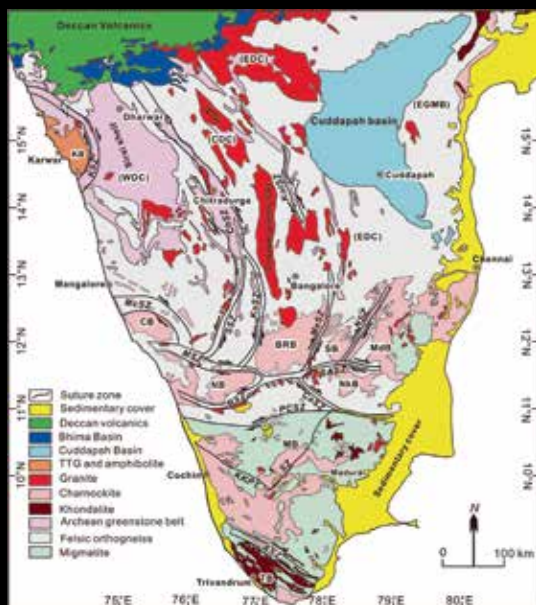
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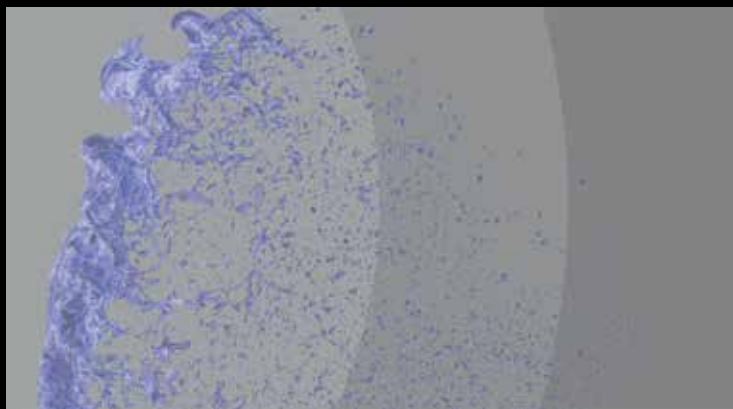
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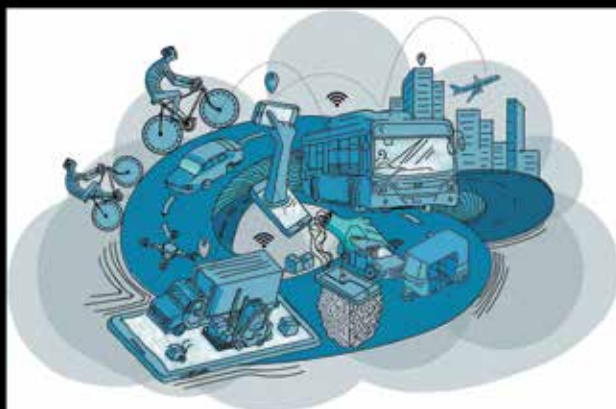
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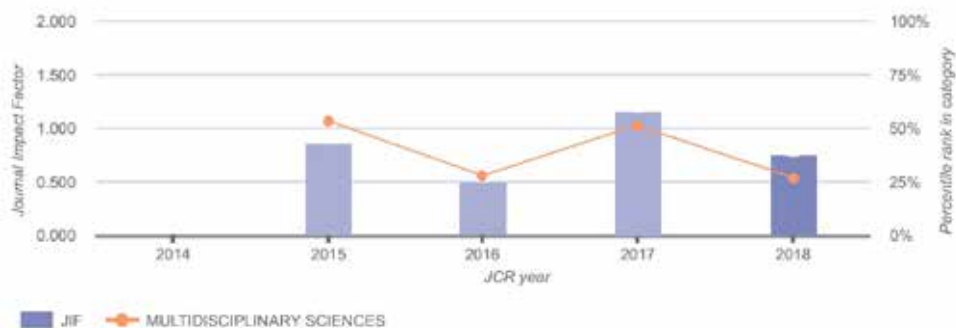
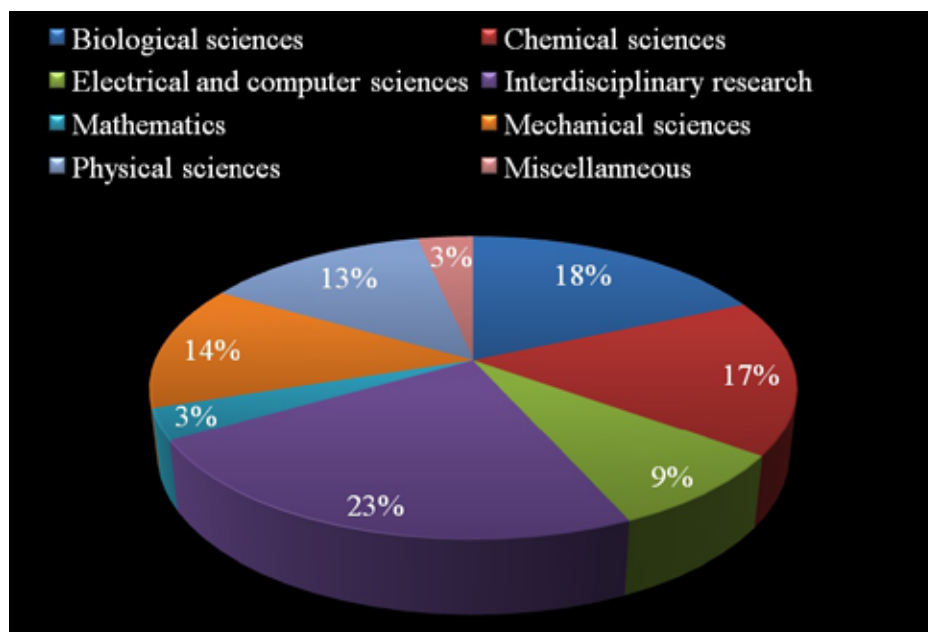


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