

IISRR – IJR

ONLINE VERSION : ISSN 2394-885X
(Print Version : ISSN2394-6873)

A Peer-Reviewed Print-in and Online published
International Journal for Research Activities
& an Initiative of the IISRR

**SPECIAL ISSUE ON
NATIONAL SYMPOSIUM
ON**

**RECENT TRENDS IN INSTRUMENTATION
SCIENCE & TECHNOLOGY**
March 19 to 21, 2015

Organized By



**DEPARTMENT OF INSTRUMENTATION SCIENCE
JADAVPUR UNIVERSITY**
Jadavpur, Kolkata 700032



Indian Institute of Social Reform & Research

[Registered under Govt. of West Bengal ACT XXVI of 1961; Registration No- S/2L/ No 10729 of 2013-14]

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Volume: I
Issue: 2
(Special Issue)

March 2015

IISRR - International Journal of Research

IJSRR - International Journal of Research

A Peer-Reviewed Print and Online International Journal
for Research Activities & An Initiative of the IJSRR

Volume: I; Issue: 2; March 19, 2015

Online Version : ISSN 2394- 885X

(Print Version : ISSN 2394- 6873)

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Volume: I; Issue: 2;

March 19, 2015

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Subscription : INR Rs.150.00; USD \$8

Designed & Published by

Dr. Asit Kumar Das

Director

Indian Institute of Social Reform & Research

P-14, Regent Estate, F-3B, Kolkata 700092, India,

email: iisrr09@gmail.com; Website: www.iisrr.in

**Online Journal maintained by
mathforumtech.com**

**Printed Journal Distributed by
Deep Prakashan**

209A, Bidhan Sarani, Kolkata- 70006

Ph: +91-33-22419449; email: deeprakashan@gmail.com

IJSRR - International Journal of Research

Online Version: ISSN 2394-885X

(Print version : ISSN 2394- 6873)

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Volume-I, Issue- 2

March19, 2015

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IISRR - International Journal of Research (IISRR-IJR)

ONLINE VERSION: ISSN 2394-885X

PRINT VERSION : ISSN 2394- 6873

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(Both Print and Online Versions)

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IJSRR - International Journal of Research

Online Version: ISSN 2394-885X

(Print version : ISSN 2394- 6873)

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Acknowledgement

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IJSRR - International Journal of Research

A Peer-Reviewed Half-Yearly Online International Journal for Research Activities & an Initiative of the IJSRR

Online Version : ISSN 2394-885X

(Print Version : ISSN 2394-6873)

Volume: I; Issue : 2(Special Issue); Mach - 2015

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Editorial

The Indian Institute of Social Reform & Research is a voluntary Institute, involves in various academic, research oriented and social reform activities. We are also publishing a peer-reviewed journal, the IISRR-International Journal of Research; both Print (ISSN 2394- 6873) and E-Journal (ISSN 2394- 885X). We would request you to visit our website (www.iisrr.in) for details.

We welcome you all to this “Special Issue “ of this Journal, contains some of the invited lectures, full papers, abstracts of papers, which are going to be presented at the National Symposium on “Recent Trends in Instrumentation Science & Technology”, organized by the Department of Instrumentation Science, Jadavpur University, during March 19 and 21, 2015. Publication of this Special Issue of IISRR-IJR is a collaborative effort of our IISRR and Dept. of Instrumentation, Jadavpur University.

General Issues, except special issues, of our Journal to cover an eclectic combination of topics rather than to make it an exclusive preserve of any particular discipline. We shall make attempts for the journal to not only showcase the diverse range of research but also to provide researchers and practitioners a platform to discuss pertinent issues that have wider implications on the different facets of academic as well as social world.

We would like to extend our thanks and gratitude to the Department of Instrumentation Science, Jadavpur University, Authors/Contributors of Articles, Reviewers, Advisers, Members of the Editorial Boards and all other persons who have extended their direct and /or indirect cooperation for publishing this Special Issue of IISRR- IJR.

We would like to extend our heartiest thanks and gratitude to the Hon’ble Vice-Chancellor, Jadavpur University and Prof. R. Bhar, Head of the Dept. of Instrumentation Science, JU for giving us the opportunity for publishing this Special Issue of the IISRR- International Journal of Research, as a collaborative programme.

We welcome academicians, researchers, and potential contributors for contributing their articles, research findings, case study reports etc. for the next issues of this Journal; and we are looking forward for receiving your contributions. We welcome submissions not only from established areas of research, but also from new and emerging fields too. We also invite your views, suggestions and criticism for improving the next issues of the IISRR-IJR.

We welcome all Educational Institutions, Institutes of Higher Learning, and Research Organizations for organizing different collaborative activities; including publishing of papers, abstracts, proceedings of seminar, symposium, workshop etc. organized their esteemed institutions.

Cooperation of all concerned is earnestly solicited.

Editor -in- Chief

From the Desk of the Head of the Department

It is my great pleasure to address you on the occasion of 10 years completion of the Department in the three-day Symposium on 'Recent Trends in Instrumentation Science & Technology' which is scheduled to be held during March 19 – 21, 2015. On behalf of the Department I welcome you all.

Jadavpur University, upgraded University Science Instrumentation Science (USIC) to the Department of Instrumentation Science, in May 2004, following the IXth plan UGC guidelines for USICs in Universities. The Department already completed 10 years and within this period Department has shown its creditable performance in Teaching and Research with a very small number of academic manpower and inadequate infrastructural facilities.

Department introduced M.Sc(Instrumentation) course from 2008-09 academic session. In total around 50 students have been awarded M.Sc. degree during last five batches. Number of Ph.D. Students awarded degree during last 10 years are 20. Number of papers published in the peer review journal of international repute is around 200. Number sponsored projects completed during the period are 18 (DST, BRNS/DAE, BEL, CSIR, UGC, Coal S & T, UGC-DAE-CSIR). Now ongoing sponsored projects are five.

I am very glad that Department is organizing National Symposium for a mission to bring Scientists, Engineers & Technologists working in the field of Instrumentation, in all over the Nation in a single platform for acknowledgement, dissemination & evolving new ideas . It is very much encouraging that papers received from the different corners of the country.

For organizing this Symposium financial help received from the Govt. of West Bengal, Higher Education Department, DST, Govt. of India, CSIR, Govt. of India, CDAC, Govt. of India and Jadavpur University. Thanks to all the organizations for their financial support. Thanks to our collaborator IISRR-IJR, Kolkata, for publishing contributed papers and write up of the invited speakers. Thanks to all invited speakers and authors of the contributed papers to make this symposium as a platform to share their innovative ideas in the different field of Instrumentation.

I wish that this Symposium will be successful by meeting its objectives, growing friendship and enabling collaboration.

(Prof. Radhaballabh. Bhar)

**Joint Editor &
Head, Department of Instrumentation Science
Jadavpur University**

ABOUT THE SYMPOSIUM ON RECENT TRENDS IN INSTRUMENTATION SCIENCE & TECHNOLOGY

About the Symposium

Instrumentation plays an important role in all corners of Science and Technology. With the advancement of technologies, particularly in the area of electronics and computation system, an enormous change has been taken place in the area of Instrumentation. Modern Instruments are more user friendly due to introduction of more automation. World wide a competition is ongoing on sophistication and multi facilities in a single system. On the present context as wideness and versatilities in Instrumentation are very large so it is not possible to know all updates by single person. Thus, a effort has been given to accommodate a good numbers of experts from different field of Instrumentation.

The Symposium includes invited talks and contributory paper presentation outlining state-of- the-art development in different areas of Instrumentation. Another aim of this Symposium is to promote scientific information interchange between researcher, developer, engineer, students and technical personnel working in the field.

Objective of the Symposium is to enable the Scientists, Faculty members, Technical Supervisors and Research scholars to present their innovative ideas. The Research papers submission should be based on the original work in thrust areas. In the Symposium invited talk will be delivered by eminent Scientists/ Industrialist from Research Institutes/ Universities/ Industries.

A cash award of Rs 5000/- will be awarded in the memory of Prof Triguna Sen, Founder Rector(Vice-Chancellor), of the Jadavpur University, to the best paper presented in the Symposium, by young researchers below the age of 30 years. Separate application should be made by any participant wishing to be considered for this award. Application should include the candidate's Curriculum Vitae, her/his complete list of publications, Title, one page abstract of the paper to be presented, along with recent passport size photograph.

Thrust Areas:

The organizing committee of the Seminar invites papers from researchers, faculty and students in the following areas.

- **Analytical and Optical Instrumentation**
- **Sensors and Transducers**
- **MEMS and Nanotechnology**
- **Biomedical Instrumentation**
- **Industrial Automation and Process Control**
- **Instrumentation for Defence and Atomic Energy**
- **Surface Science / Coatings Technology**
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- **Innovative Design Methodology**
- **Thermal and Cryogenic Instrumentation**
- **Virtual and intelligent Instrumentation VLSI**
- **Other related topics in Instrumentation**

About the Department

Department of Instrumentation Science, Jadavpur University, originally started as University Science Instrumentation Centre (USIC) in 1978, under UGC 6th plan. As per 9th plan guidelines of UGC, USIC, of Jadavpur University was upgraded to the Department of Instrumentation Science in May 2004 and became a full fledged Department under Faculty of Science, Jadavpur University. Since inception, the Department has been carrying out Research and Development activities through various funding agencies viz. UGC, DST, CSIR, DAE etc. In addition, M.Sc (Instrumentation) programme has been started from 2008.

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