

## Report

# The 2nd International Symposium on Recent advances in Experimental Fluid Mechanics

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**Abstract** : The 2<sup>nd</sup> International Symposium on Recent advances in Experimental Fluid Mechanics (REAFM2) was held at Koneru Lakshmia Engineering, Vijayawada, Andhra Pradesh, India, March 3-6, 2008. The conference attracted 120 participants from 12 countries. The conference was organized in 3 parallel sessions on all the 4 days. On all days two Keynote Lectures, one in the forenoon and one in the afternoon were scheduled. Soon after the Keynote Lectures three parallel sessions were scheduled, grouping topics of interest in a particular session.

**Keywords** : Flow Physics, Visualization, Vortex, Schlieren, Shadowgraph, High Speed Jets, Base Flow, Supersonic, Hypersonic, Turbulent Flows, Shock Waves, CFD, Uncertainty.

## 1. Introduction

This symposium is the Second International Program Organized by the Flow Physics Society found by Professor E Rathakrishnan. The first one was held from December 18-21, 2000, at Indian Institute of Technology Kanpur, India. After a gap of 7 years the Second Symposium of the Society was organized from March 3-6, 2008, at Koneru Lakshmaiah College of Engineering (KLCE), Vijayawada, under the chairmanship of Professor Rathakrishnan.

Large number of scientists from different parts of the world participated in the Symposium. The aim of the Symposium is to bring eminent scientists working in the area of Flow Physics on one platform to exchange their research findings and encourage youngsters to perceive research in this area. To meet this aim, the Society constantly strives to identify and honor scientists who significantly contributed to the field of Flow Physics through their, teaching, research, development and publications.

## 2. Inauguration

The Conference was inaugurated by Dr. Ramagowda, Ex-Chairman of All India Council for Technical Education (AICTE). The Symposium Chairman Prof. Rathakrishnan delivered his Chairman address. The Chief Patron Mr. Satyanarayana, Chairman KLCE addressed the delegates, highlighting the environment of KLCE.



Fig. 1 Registration Desk



Fig. 2 A view of the Participants



Fig. 3 Conference Chairman addressing



Fig. 4 Chief Patron addressing

The Society instituted **Professor Rathakrishnan Award**, in the name of the Founder President of the Society, with the aim of honoring outstanding researchers of international standing in the area of Flow Physics. In the Second International Symposium on Recent Advances in Experimental Fluid Mechanics, the Society has selected Professor George Koppenwallner, Founder Director of Hypersonic Technology, Gottingen, Germany, Professor Trevor Moulden, the author of the book Transonic Aerodynamics, Tennessee Space Institute, USA, Professor J. Iwamoto, Internationally renowned researcher of free and impinging jets, Tokyo Denki University, Japan and Professor Y. Nakayama, Editor-in-Chief of Journal of Visualization and Founder President of Futuristic Technology, Japan, for the award.



Fig. 5 Professor J. Iwamoto, Professor T. Moulden, Professor Y. Nakayama and Professor George Koppenwallner.

### 3. Organization

The Second International Symposium on Recent Advances in Experimental Fluid Mechanics has been organized by the Flow Physics Society, supported by Koneru Lakshmiiah College of Engineering (KLCE), Vaddeswaram, Guntur District, Andhra Pradesh, India.



Fig. 6 Group photograph of a section of delegates

### 4. Special Sessions

In order to highlight the leading research areas in the topic of the symposium, six keynote and 3 invited lectures by prominent scientists were organized in this symposium. They are the following.

1. Experimental Study of Membrane Structure Vehicle in Hypersonic Wind tunnel  
Kojiro Suzuki, Osamu Imamura and Tadaharu Watanuki (Keynote Lecture)
2. Flow Oscillation and Thermal Effect in a Tube driven by a Supersonic Jet  
Junjiro Iwamoto (Keynote Lecture)
3. Visualization of Mind  
Y. Nakayama, M. Oki, N. Fukushima, K. Aoki,  
K. Komaki, S. kato, H. Maruoka and N. Otonari (Keynote Lecture)
4. Experimental Fluid Dynamics and Industrial Process Technology  
G. Koppenwallner (Keynote Lecture)
5. Symmetry and Invariance in Fluid Mechanics  
Trevor H. Moulden (Keynote Lecture)
6. Flow Induced Noise: Characterization, Modeling and Control  
V. Bhujanda Rao (Keynote Lecture)
7. Role of Wind Tunnel in Aerodynamics Design of Launch Vehicle  
A.E. Sivaramakrishnan (Invited Paper)
8. High-Speed Flow Control by Electro-Discharge Plasma Technique  
Sergey B. Leonov (Invited Paper)
9. On the Development of Most Amplified Wavelength Gotler Vortices  
D.A. Shah, H. Mitsudharmadi, S.H. Winoto and Tandiono (Invited Paper)



Fig. 7 Keynote of Prof. K. Suzuki



Fig. 8 Keynote of Prof. Y. Nakayama



Fig. 9 Invited Lecture of Prof. Dilip Shah



Fig. 10 Invited Lecture of Prof. Leonov



Fig. 11 A session in progress



Fig. 12 TDU Students in a session



Fig. 13 Lecture by Prof. M. Endo

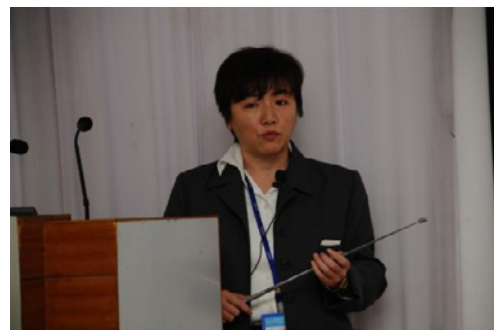


Fig. 14 Lecture by Prof. Y. Sakakibara

## 5. Proceedings

All 78 papers submitted before the deadline have been published as bound volume. The proceedings published by University Press (India) Private Limited (ISBN 13: 978 81 7371 622 5, ISBN 10: 81 7371 622 6), 3-6-747/1/A & 3-6-754/1, Himatnagar, Hyderabad 500 029 (A.P.), India, Pages 699, Edited by E Rathakrishnan, contains papers that were accepted for oral presentation in the symposium. The papers in this volume cover a wide range of areas which are in the forefront of Flow Physics research in different countries.

## 6. Attendance

More than 120 participants from 22 countries attended RAEFM2. In addition to the participants from abroad and India, large number of students from KLCE and other Educational Institutions in India also attended the Conference.

## 7. Symposium Tour

In order to give time for the Scientists to exchange their views and experiences, of half day Pleasure Trip was organized by the Symposium. The delegates travel from KLCE to a tourist spot called Amaravathi which is about one and half hour drive and located on the banks of river Krishna. There are many places of historical importance, including a Buddhist Research Center, where an 80 ft high Buddha statue made of concrete structure is there. The delegates had a pleasant experience during this trip.

## 8. Book Exhibition

During the Symposium, some publishers exhibited Technical and Scientific books, associated with Fluid Mechanics.

## 9. Symposium Dinner

The RAEFM 2 arranged a Welcome Party on March 3<sup>rd</sup> and a banquette on March 5<sup>th</sup>. Both the parties were held at Hotel Gateway, Vijayawada.



(a)



(b)



(c)



(d)

Fig. 15 (a)-(d) Some Pictures in the Symposium Party

## 10. Validictory Session



Fig. 16 Prof. L.S. Reddy thanking the delegates



Fig. 17 Prof. Rathakrishnan Concludes

### *Acknowledgement*

The financial support extended by Mr. Satyanaraya, Chairman KLCE is gratefully acknowledged. Special thanks to the Organizing Committee members who contributed to the successful conduct of the Symposium.

### *Author Profile*



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