



ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
MOODBIDRI -574225
DEPARTMENT OF MECHANICAL ENGINEERING



Kumamoto University

**ONE DAY NATIONAL WORKSHOP
ON
"NANOFLUIDS: APPLICATIONS FOR HEAT TRANSFER AND ENERGY SYSTEMS"**
REPORT IN BRIEF

One Day National Workshop on "Nano-Fluids: Applications for Heat Transfer and Energy Systems" was organized by Department of Mechanical Engineering, Alva's institute of engineering and technology, Moodbidri on 28th September 2017 for the benefit of the students, research scholars, faculty from technical institutes and industrialists to upgrade and share their knowledge.



Inauguration of Workshop

Dr. Shuichi Torii, Assistant Director (College of Cross-Cultural and Multidisciplinary Studies) and Professor in the Department of Mechanical System Engineering, Kumamoto University – Japan was Chief Guest as well as resource person of the workshop. **Mr. Vivek Alva**, Managing trustee, Alva's Education Foundation and **Dr. P. Selvakumar**, Vice Principal, PSN College of Engg and Technology, Tirunelveli were guest of honours of the function. President of the function **Dr. Peter Fernandes**, Principal, AIET, **Prof. K V Suresh**, convener of the workshop and workshop coordinator **Dr. Satyanarayan** were presided over the podium.

In an inaugural address, **Prof. Shuichi Torii** said, Nanofluid helps in improving the performance of the thermal systems by enhancing heat transfer rate. Nanofluids are widely used in various applications like as fuel, as coolant in automobiles, in medical and electronic equipment to reduce the thermal resistance. Prof. Torii addressed about MOU between AIET and Kumamoto University following opportunities for foreign students to pursue Master and Doctoral courses in Kumamoto University, Japan. He also gave the information on the international symposium which will be held in Japan every year in the month of March and suggested the students and staff members to apply.

Mr. Vivek Alva, guest of honour addressed the gathering highlighting understandings between AIET and Kumamoto University about exchange of students, faculty, joint projects handling and utilization of mutual resources in the domains of engineering.

Dr. Peter Fernandes Principal of AIET delivered the presidential talk to the gathering. Principal thanked Prof. Torii for hospitality given us at Japan during MoU agreement. Then, he told about the importance of nanotechnology and nanofluids in engineering applications. The reason for selecting nano size particles over micro size particles was well explained by Principal. He gave an example of his paper published in Elsevier journal within three days expressing how important and advanced field is nanofluid. He appreciated the efforts of Dept. of Mechanical Engg in organizing such a wonderful workshop. He thanked Prof. Shuichi Torii for agreeing to deliver Technical talk. He then called upon all the gathering to benefit from this national workshop.

The program was concluded by Vote of Thanks by workshop coordinator **Dr. Satyanarayan**, Associate Professor, Dept. of Mechanical Engg, AIET.

As a part of workshop, Technical talk on Turbulent heat transfer behavior of nanofluid in a circular tube heated under constant heat flux and its application was presented by Prof. Shuichi Torii. He introduced Kumamoto University, Japan indicating the location of Kumamoto, Japan in the world map and how far it is from India. **Prof. Torii** gave a brief history of Kumamoto University highlighting legends created from this university.

In the talk Prof. Shuichi Torii described basics and importance of Nano-Fluid defining that, it is a fluid with particles less than 100nm in diameter suspended in a fluid like water, engine oil or other fluid etc. Further, he explained and elaborated results of all the research works done on Nanofluids at Kumamoto University, Japan. He spoke about agglomeration of nano particles and prevention of the same. He conveyed that, turbulent flow is of higher importance than laminar flow.



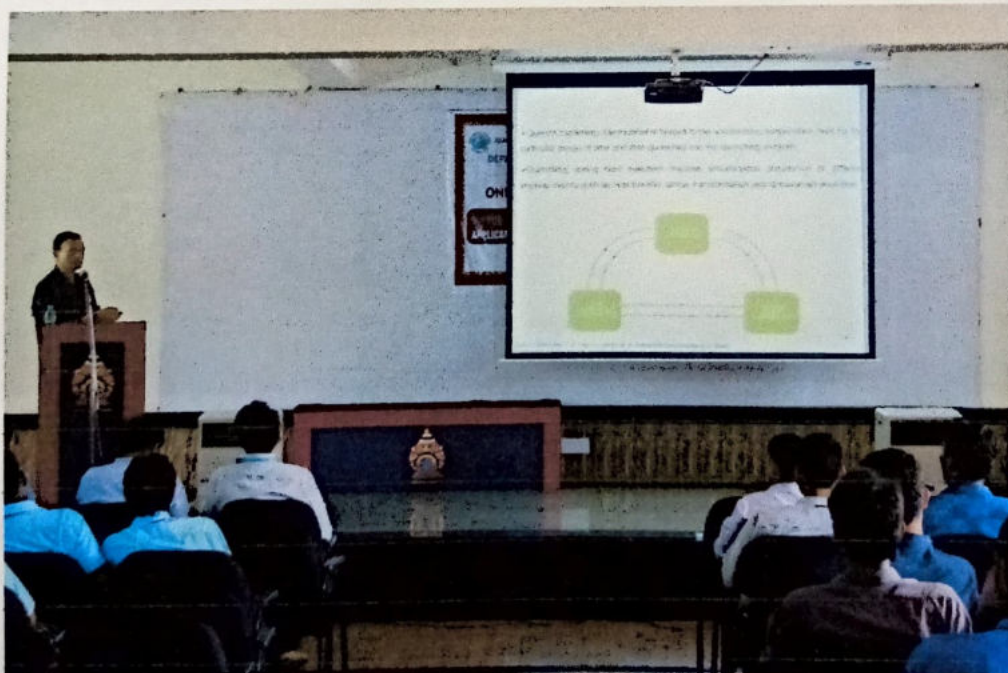
Talk: Turbulent heat transfer behavior of nanofluid by **Dr. Shuichi Torii**

In the presentation, he exhibited compounding of Nano Particles of Cu and Al_2O_3 with water and measurement of thermal conductivity against the concentration of the Nano particles. He said, diamond nano particles were synthesised at Institute of pulsed power science (Shockwave and condensed matter research centre) of Kumamoto University. He also talked about the Zeta potential of Nano- Diamonds in fluid. In which water was considered as a fluid.

In future Professor will be focussing on usage of Nanofluids as coolants so that higher performance and lower size can be achieved. He ended his presentation indicating that research in the area of improvement of heat transfer performance of Nano-Particles is important and should be focussed on systematically. The talk was followed by interaction with delegates. **Prof. Chadaga**, Dean and Head, Dept. of MBA, interacted with Professor about use of nanofluids in space applications. Later as a token of love and appreciation Memento was given to Prof. Shuichi Torii by **Dr. Peter Fernandes**.



Presentation of Memento to Prof. Shuichi Torii by Principal Dr. Peter Fernandes



**Talk: Science & Technology of Quenching Nanoquenchant for Industrial Heat Treatment-
Dr. K. N. Prabhu, Professor, NITK Surathkal**



Discussion about MoU matters, exchange of faculty and students



Discussion of exchange of students between AIET and Kumamoto University, Japan

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Prof. Shuichi Torii Interaction with students

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