

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Affiliated to Visvesvaraya Technological University, Belagavi Approved by AICTE,
New Delhi & Recognised by Government of Karnataka)
Shobhavana Campus, Mijar – 574225, Moodbidri.
Dakshina Kannada, Karnataka, India.



5 Years Complete

(20–6–2017 to 20–6–2022)

Report on

**Activities executed
in Association with**

**Alva's Institute of Engineering and Technology
and
Kumamoto University, Japan**



Kumamoto University

Kumamoto University, Japan

Prepared by

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Student Exchange Agreement

between

Faculty of Engineering, Graduate School of Science and
Technology, and Faculty of Advanced Science and Technology,
Kumamoto University

and

Alva's Institute of Engineering & Technology

Following the signing of a Basic Agreement on Academic Exchange Program between Faculty of Engineering, Graduate School of Science and Technology, and Faculty of Advanced Science and Technology, Kumamoto University, Japan, and Alva's Institute of Engineering & Technology, India, both parties conclude an Agreement on Student Exchange.

1. Duration of Stay

Duration of stay for students of both parties shall not exceed one academic year, and will normally start in February or August for the University of Alva's Institute of Engineering & Technology and in April or October for Kumamoto University.

2. Number of Exchange Students

Each party will normally accept up to a maximum of 2 students under this Agreement yearly. This number can be modified, if necessary, based on the discussion between both the parties.

3. Selection of Exchange Students

The home university will normally recommend most suitable students to the host university based on language ability and academic excellence.

4. Enrollment of Exchange Students

- (a) Students of Kumamoto University will register as Alva's Institute of Engineering & Technology exchange students and can attend lectures, seminars, and tutorials. Graduate students can also attend research projects.
- (b) Students of Alva's Institute of Engineering & Technology will register as Kumamoto University exchange students and can attend lectures, seminars, and tutorials. Graduate students can also attend research projects.
- (c) Participating students will be subjected to the regulations of the host university.

5. Study Program and Evaluation

Each student will determine their study program at the host university in consultation

Agreement on Academic Exchange
between
Faculty of Engineering, Graduate School of Science and
Technology, and Faculty of Advanced Science and Technology,
Kumamoto University
and
Alva's Institute of Engineering & Technology

Faculty of Engineering, Graduate School of Science and Technology, and Faculty of Advanced Science and Technology, Kumamoto University, Japan, and Alva's Institute of Engineering & Technology, India, are signing this Agreement in order to promote friendship and academic exchanges.

- 1) Both parties agree to an academic exchange in various areas of education and research.
- 2) Both parties will make an effort to exchange professors, researchers, administrative and professional personnel and students, and also exchange research materials and publications.
- 3) Both parties will make an effort to promote the exchange but will respect the independence of opinion to their mutual benefits. Specific details on the implementation of particular exchanges noted above and results from the agreement shall be negotiated between the two institutions subject to approval by each institution.
- 4) . This Agreement will remain effective for five years from the date of signing. It may be renewed by mutual consent, if proposed by either party.
- 5) This Agreement may be amended or terminated by mutual consent, if proposed by either party, by giving at least six months notice in writing to the other party.
- 6) This Agreement is written in English and signed in duplicate by both parties. It may be translated into other languages for reference purposes.

Faculty of Engineering, Graduate
School of Science and Technology,
and Faculty of Advanced Science
and Technology, Kumamoto University
Japan


Dean Tsuyoshi Usagawa

Date: 20 June, 2017

Alva's Institute of Engineering
& Technology
India


Principal Peter Fernandes

Date: 20/06/2017



PRINCIPAL

Alva's Institute of Engg. & Technology,
MOODBIDRI - 574 225, D.K

with academic advisers of both host and home universities. Academic performance shall be evaluated according to the rules of the host university.

6. Academic Record and Accreditation

Each student will submit to the home university the academic record obtained at the host university and it will be accredited according to the rules of the home university.

7. Tuition

Each student shall be exempted from the payment of any entrance examination fees, admission fees and tuition fees of the host university.

8. Accommodation

The host university will assist students in finding accommodation at a reasonable cost.

9. Financial Responsibility

Exchange students will be responsible for their own expenses, including travel expenses, accommodation costs and health care fees.

10. Duration

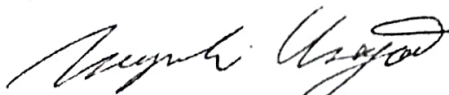
This Agreement is effective from the date of signing, and remains effective until the expiration of the Agreement on Academic Exchange.

11. Amendment/Termination

This Agreement may be amended or terminated by mutual consent, if proposed by either party, by giving at least six months notice in writing to the other party.

12. This Agreement is written in English and signed in duplicate by both parties. It may be translated into other languages for reference purposes.

Faculty of Engineering, Graduate
School of Science and Technology,
and Faculty of Advanced Science and
Technology, Kumamoto University
Japan


Dean Tsuyoshi Usagawa

Date: 20 June, 2017

Alva's Institute of Engineering
& Technology
India


Principal Peter Fernandes
Alva's Institute of Engg. & Technology,
Moor. MOODBIDRI - 574 225, D.K
Date: 20/06/2017



Academic Exchange Agreement between Kumamoto University and Alva's Institute of Engineering & Technology



Kumamoto University



Alva's Institute of Engineering & Technology, India and Faculty of Engineering, Graduate School of Science and Technology, and Faculty of Advanced Science and Technology, **Kumamoto University**, Japan, have signed a Memorandum of Understanding (MOU) on **20 June 2017** to promote friendship and academic exchanges in various areas of education and research.



Discussion by Dr. Peter Fernandes about MoU matters, exchange of faculty and students after signing MoU with Prof. Kazuyuki Hokamoto and Prof. Shuchi Torii (at his office, Kumamoto University)

ಜಪಾನ್ ವಿಶ್ವವಿದ್ಯಾಲಯ ಜತೆ ಆಳ್ವಾಸ್ ಒಪ್ಪಂದ ಕಾರ್ಪೊರೇಟ್ ಸಂಸ್ಥೆಗಳ ನಿರೀಕ್ಷೆಗೆ ತಕ್ಕಂತೆ ಗುಣಮಟ್ಟದಲ್ಲಿ ಬದಲಾವಣೆ ಚಿಂತನೆ

■ ವಿಜಯವಾಣಿ ಸುದ್ದಿಜಾಲ ಮೂಡುಬಿದಿರೆ

ಇಂಜಿನಿಯರಿಂಗ್ ಶಿಕ್ಷಣದಲ್ಲಿ ಆಧುನಿಕ ಅಗತ್ಯತೆ ಹಾಗೂ ಕಾರ್ಪೊರೇಟ್ ಸಂಸ್ಥೆಗಳ ನಿರೀಕ್ಷೆಗೆ ತಕ್ಕಂತೆ ಗುಣಮಟ್ಟದಲ್ಲಿ ಬದಲಾವಣೆ ತರುವ ನಿಟ್ಟಿನಲ್ಲಿ ಮೂಡುಬಿದಿರೆಯ ಮಿಜಾರಿ ನಲ್ಲಿರುವ ಆಳ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜು-ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯ ಮಹತ್ವದ ಶೈಕ್ಷಣಿಕ ಒಪ್ಪಂದ ಮಾಡಿಕೊಂಡಿವೆ.

ಜಪಾನ್‌ನ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದಲ್ಲಿ ಏರ್ಪಡಿಸಿದ್ದ ಸಮಾರಂಭದಲ್ಲಿ ಆಳ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಪ್ರಾಂಶುಪಾಲ ಡಾ.ಪೀಟರ್ ಫರ್ನಾಂಡಿಸ್ ಮತ್ತು ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಗ್ಲೋಬಲ್ ಎಜ್ಯುಕೇಷನ್ ಸೆಂಟರ್ ಫಾರ್ ನೈನ್ಸ್ ಹಾಗೂ ಟೆಕ್ನಾಲಜಿಯ ನಿರ್ದೇಶಕ ಡಾ.ಸುಯೋಶಿ ಉಸಾಗವ ಪರಸ್ಪರ ಒಪ್ಪಂದಕ್ಕೆ ಸಹಿ ಹಾಕಿದರು. ಒಡಂಬಡಿಕೆಯ ರೂವಾರಿಗಳಾದ ಆಳ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಮೆಕ್ಯಾನಿಕಲ್ ವಿಭಾಗದ ಪ್ರಾಧ್ಯಾಪಕ ಡಾ.ಸತ್ಯನಾರಾಯಣ ಹಾಗೂ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಪ್ರಾಧ್ಯಾಪಕ ಪ್ರೊ. ಕಾಜುಹಾಕಿ ಹೊಕೊಮೊಟೊ ಮೊದಲಾದವರು ಉಪಸ್ಥಿತರಿದ್ದರು.



ಆಳ್ವಾಸ್ ಕಾಲೇಜು- ಜಪಾನ್‌ನ ಕುಮಮೊಟೊ ವಿವಿ ಒಪ್ಪಂದ ಸಹಿಯು.

**ಗುಣಮಟ್ಟದ
ಶಿಕ್ಷಣ
ಉದ್ದೇಶ**

ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರಿಗೆ ಉನ್ನತ ಅಧ್ಯಯನಕ್ಕೆ ಅವಕಾಶ ಕಲ್ಪಿಸುವುದು, ಹೊಸ ಆವಿಷ್ಕಾರಗಳ ಮೂಲಕ ಸಂಶೋಧನೆಗೆ ನೆರವಾಗುವುದು, ಸಂಶೋಧನೆಗೆ ಆಯ್ಕೆಯಾದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದಿಂದ ಸ್ಕಾಲರ್‌ಶಿಪ್ ಸೌಲಭ್ಯ, ಎರಡೂ ಸಂಸ್ಥೆಗಳು ಜಂಟಿಯಾಗಿ ತಾಂತ್ರಿಕ ಸಮ್ಮೇಳನ ನಡೆಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳ ಕಲಿಕಾ ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರ ಭೋದನಾ ಗುಣಮಟ್ಟ ಹೆಚ್ಚಿಸಲು ಕಾರ್ಯಗಾರ ಏರ್ಪಡಿಸುವುದಕ್ಕೆ ಎರಡೂ ಸಂಸ್ಥೆಗಳ ಸಹಕಾರ, ಇಂಟರ್‌ನ್‌ಶಿಪ್ ಮೂಲಕ ತಂತ್ರಜ್ಞಾನದ ಮೂಲ ಮಾದರಿಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನೆರವು ಮಾತ್ರವಲ್ಲದೆ ವಿದ್ಯಾರ್ಥಿಗಳ ಕಲಿಕಾ ಸಾಮರ್ಥ್ಯ ಹೆಚ್ಚಿಸಲು ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರು ತಂತ್ರಜ್ಞಾನದಲ್ಲಿ ಹೊಸ ಸಂಶೋಧನೆಗಳಿಗೆ ನೆರವಾಗುವುದು ಸಹಿತ ಶೈಕ್ಷಣಿಕ ಗುಣಮಟ್ಟವನ್ನು ಹೆಚ್ಚಿಸುವ ನಿಟ್ಟಿನಲ್ಲಿ ಹಲವು ಮಹತ್ವ ಅಂಶಗಳನ್ನು ಒಪ್ಪಂದ ಒಳಗೊಂಡಿದೆ.

ಆಲ್ಟಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜು ಜಪಾನ್ ಕುಮಮೊಟೊ ವಿವಿ ಒಪ್ಪಂದ



■ ವಿಶ್ವ ಸುದ್ದಿಲೋಕ ಮೂಡುಬಿದಿರೆ

ಎಂಜಿನಿಯರಿಂಗ್ ಶಿಕ್ಷಣದಲ್ಲಿ ಅಧುನಿಕ ಆಗತ್ಯತೆ ಹಾಗೂ ಕಾರ್ಪೊರೇಟ್ ಸಂಸ್ಥೆಗಳ ನಿರೀಕ್ಷೆಗೆ ತಕ್ಕಂತೆ ಗುಣಮಟ್ಟದಲ್ಲಿ ಬದಲಾವಣೆಗಳನ್ನು ತರುವ ನಿಟ್ಟಿನಲ್ಲಿ ಮೂಡುಬಿದಿರೆಯ ಮಿಜಾರಿನಲ್ಲಿರುವ ಆಲ್ಟಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜು- ಜಪಾನ್ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯ ಮಹತ್ವದ ಶೈಕ್ಷಣಿಕ ಒಪ್ಪಂದ ಮಾಡಿಕೊಂಡಿದೆ.

ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರಿಗೆ ಉನ್ನತ ಅಧ್ಯಯನಕ್ಕೆ ಅವಕಾಶ ಕಲ್ಪಿಸುವುದು ಹೊಸ ಆವಿಷ್ಕಾರಗಳ ಮೂಲಕ ಸಂಶೋಧನೆಗೆ ನೆರವಾಗುವುದು ಸಂಶೋಧನೆಗೆ ಆಯ್ಕೆಯಾದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದಿಂದ ಸ್ಕಾಲರ್‌ಶಿಪ್ ಸೌಲಭ್ಯ.

ಎರಡೂ ಸಂಸ್ಥೆಗಳು ಜಂಟಿಯಾಗಿ ತಾಂತ್ರಿಕ ಸಮ್ಮೇಳನಗಳನ್ನು ನಡೆಸುವುದು. ವಿದ್ಯಾರ್ಥಿಗಳ ಕಠಿಣ ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರ ಭೋದನಾ ಗುಣಮಟ್ಟವನ್ನು ಹೆಚ್ಚಿಸಲು ಕಾರ್ಯಾಗಾರಗಳನ್ನು ಏರ್ಪಡಿಸುವುದಕ್ಕೆ ಎರಡೂ ಸಂಸ್ಥೆಗಳ ಸಹಕಾರ, ಇಂಟರ್ನ್ ಶಿಪ್ ಮೂಲಕ ತಂತ್ರಜ್ಞಾನದ ಮೂಲ

ಮಾದರಿಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನೆರವು ಮಾಡುವುದಕ್ಕೆ ವಿದ್ಯಾರ್ಥಿಗಳ ಕಠಿಣ ಸಾಮರ್ಥ್ಯವನ್ನು ಹೆಚ್ಚಿಸಲು ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರು ತಂತ್ರಜ್ಞಾನದಲ್ಲಿ ಹೊಸ ಸಂಶೋಧನೆಗಳಿಗೆ ನೆರವಾಗುವುದು, ಸಹಿತ ಶೈಕ್ಷಣಿಕ ಗುಣಮಟ್ಟವನ್ನು ಹೆಚ್ಚಿಸುವ ನಿಟ್ಟಿನಲ್ಲಿ ಹಲವು ಮಹತ್ವ ಅಂಶಗಳನ್ನು ಒಪ್ಪಂದ ಒಳಗೊಂಡಿದೆ.

ಜಪಾನ್ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದಲ್ಲಿ ಏರ್ಪಡಿಸಿದ್ದ ಸಮಾರಂಭದಲ್ಲಿ ಆಲ್ಟಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಪ್ರಿನ್ಸಿಪಾಲ್ ಡಾ.ಪಿ.ಬಿ. ಪರ್ನಾಂಡಿಸ್ ಮತ್ತು ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಗ್ಯಾಬ್ರೀಲ್ ಎಜುಕೇಷನ್ ಸೆಂಟರ್ ಫಾರ್ ಸೈನ್ಸ್ ಹಾಗೂ ಟೆಕ್ನಾಲಜಿಯ ನಿರ್ದೇಶಕ ಡಾ. ಸುಯೋಶಿ ಉಸಾಗಾವೆ ಪರಸ್ಪರ ಒಪ್ಪಂದಕ್ಕೆ ಸಹಿ ಹಾಕಿದರು. ಒಡಂಬಡಿಕೆಯ ರೂವಾರಿಗಳಾದ ಆಲ್ಟಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಮೆಕ್ಯಾನಿಕಲ್ ವಿಭಾಗದ ಪ್ರಾಧ್ಯಾಪಕ ಡಾ.ಸತ್ಯನಾರಾಯಣ ಹಾಗೂ ಕುಮಮೊಟೊ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಪ್ರಾಧ್ಯಾಪಕ ಪ್ರೊ. ಕಾಜುಹಾಕಿ ಹೊಕೊಮೊಟೊ ಉಪಸ್ಥಿತರಿದ್ದರು.

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Shobhavan Campus, Mijar, Moodbidri - 574225

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Approved by AICTE, New Delhi & Recognized by Government of Karnataka)



Activities Under MOU with “Kumamoto University” 2017-18



Kumamoto University

Kumamoto University
Japan



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**



ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
Shobhavana Campus, Mijar, Moodbidri - 574225
Mangalore, D.K.
(An ISO 9001:2008 Certified Institution)
(A Unit of Alva's Education Foundation ®, Moodbidri)



DEPARTMENT OF MECHANICAL ENGINEERING

in association with
KUMAMOTO UNIVERSITY, JAPAN



This is to certify that Mr./Dr./Mrs/Ms.
of attended the

ONE DAY NATIONAL WORKSHOP ON

NANO FLUIDS: APPLICATIONS FOR HEAT TRANSFER AND ENERGY SYSTEMS

held on 28th September - 2017

Co-ordinator
(Dr. Setyanarayan)

Convenor
(Prof. K. V. Suresh)

Principal
(Dr. Peter Fernandes)

Prof. S. Torii
Assistant Director,
Kumamoto University, Japan



Chief Patron
Dr. M. Mohan Alva
Chairman, AET, Moodbidri.

Patrons
Mr. Vivek Alva
Managing Trustee, AIET, Moodbidri.

Dr. Peter Fernandes
Principal, AIET, Moodbidri.

Convener
Prof. Suresh K V
HOD, Dept. of Mech Engg., AIET.

Coordinator
Dr. Satyanarayan
Mob: 996481960
Email: satyanarayankammara@gmail.com
satyan.nitk@yahoo.com

Organizing Committee
Prof. Harish K
Prof. S C Prabhu
Prof. Yogish Rao
Prof. Shankarappa Kalgudi
Prof. Kumaraswamy

ABOUT THE INSTITUTE
Alva's Institute of Engineering and Technology (AIET) is a premier Engineering Institute of Alva's Education Foundation established in the year 2008. AIET currently has carved a niche for itself for quality education for the engineering domain in the region. Approved by All India Council for Technical Education (AICTE), New Delhi and affiliated to VTU, Belgaum, Karnataka, AIET College is found adjacent to Moodbidri-Mangalore National road, which is 24 Km from Mangalore International airport. It has a lush green surrounding as part of the Alva's Shobhavana Campus which has more than two thousand variety of herbal plants. National and State Conferences are held on regular basis on different themes. More than 80 Guest lectures conducted every year spanning from current topics in each field to specialized topics from experts. E-Learning enabled through EDUSAT training programme in association with INRO. Along with constant encouragement and support in culture and sports, AET remains equally committed to academic excellence. This is well portrayed in consistently good results in B.E., M.B.A. and M. Tech. Regular industry visits for students in every semester. Live projects in every semester to help students to bridge the industry-academic gap. Seminar Halls, Indoor & Outdoor auditoriums with all necessary modern facilities are available on campus for conducting activities, events of various magnitudes. AIET College has glorious infrastructural facilities that enhance optimum college mood, well equipped laboratories, well stocked with books, internet, transportation facility, library. With all, in short, each & every conceivable has been provided to make sure that students learn in a setting that stimulates thinking and builds confidence to satisfy the challenges of tomorrow.

COURSES OFFERED
• Mechanical Engineering
• Civil Engineering
• Computer Science & Engineering
• Electronics & Communication Engineering
• Information Science & Engineering
• Master of Business Administration
• M.Tech. in — Thermal Power Engineering
— Computer Science & Engineering
— VLSI Design & Embedded system



One Day National Workshop on
Nano Fluids:
Applications for
Heat Transfer and Energy Systems
28th September 2017
Organized by
Department of Mechanical Engineering
Alva's Institute of Engineering & Technology,
Shobhavana Campus, Mijar,
Moodbidri - 574225
Mangalore Dist., Karnataka, India.
Website : www.aiet.org.in
Venue : MBA Seminar Hall, MBA Block

ABOUT THE DEPARTMENT
Department of Mechanical Engineering was established in the year 2008, recognized by AICTE, New Delhi and affiliated to VTU, Belgaum with an intake of 60 and has enhanced to 180 from academic year 2012-13. The Post Graduate course, M.Tech in Thermal Engineering has introduced from academic year 2012-13 with an intake of 18 students. Department is recognized as a research centre by VTU and two faculties are pursuing PhD program in this centre. Department is actively involved in co-curricular and extracurricular activities with organizations and professional bodies. The main objective of the department is to provide academic excellence, knowledge and nurture talent in the area of Mechanical Engineering. The department is also looking forward to start sophisticated engine lab to explore and research on Alternative Fuels.

ABOUT WORKSHOP
The objective of the workshop is to introduce the participants to the emerging trends in the area of Nano fluids.

Highlights:
To expose faculty, scholars and students to the recent developments in nanofluids.
Exposure of nanofluids in heat transfer and energy systems.
Discussions on Thermal properties of nanofluids.
Interactive lecture sessions.
Career guidance by experts.
Certificate will be issued to the participants by the College.

RESOURCE PERSONS

Dr. Shalekh Toril
Asst. Director & Professor
Dept. of Mechanical system Engg.
Graduate School of Science & Technology
Kumamoto University, Japan

Dr. K. N. Prabhu,
Professor
Dept. of Metallurgical & Materials Engg.
NITK, Nanital

Dr. S. Suresh
Associate Dean (R&D) and
Assistant Professor
Dept. of Mechanical Engg.
National Institute of
Technology Visakhapatnam

ELIGIBILITY FOR PARTICIPATION
Program is open to all students, research scholars, industrialists and teaching faculty from technical/science institutes in the Department of Mechanical/Production/Manufacturing/Material Science/Physics/Chemistry/Nano technology and related disciplines.

BUDGET FOR PARTICIPATION FEE
Rs. 300/- for students, Rs. 600/- for research scholars, faculty from academy, institutions and industrialists. Demand Draft should be drawn in favor of Alva's Institute of Engineering & Technology payable at Moodbidri, Mangalore.

ACCOMMODATION
Limited accommodation can be provided to outstation participants on shared basis in the hostel on prior request. There is nominal charge for boarding and lodging.

HOW TO REGISTER
Registration form is available in the brochure or can be downloaded from the College website. The completed form should be sent to the following address. Also scanned copy of the form and DD may be forwarded to the mail ID given below.

Dr. Satyanarayan
Workshop Coordinator
Workshop on
Nano Fluids: Applications for Heat Transfer and Energy Systems
Department of Mechanical Engineering
Alva's Institute of Engineering & Technology
Mijar, Moodbidri - 574225, Karnataka
satyanarayankammara@gmail.com

Telephone No : 08258-262725
9964810960
9880496920 (HOD)
Fax : 08258-262726

IMPORTANT DATES
Last date for receiving application
21 September 2017
Last date for confirmation of Participation
23 September 2017

One Day National Workshop
Nano Fluids:
Applications for
Heat Transfer and Energy Systems
28th September 2017
Registration form

1. Name : _____
2. Designation : _____
3. Qualification : _____
Degree, Specialization : _____
4. Experience : _____
5. Institution : _____
6. Whether the college is affiliated to VTU : Yes / No
7. Address for communication : _____

Phone : _____
Mobile : _____
Email id (mandatory) : _____

8. Payment Details:
Bank : _____
DD. No. : _____
Amount, Rs. : _____
Date : _____

Signature of the applicant with date
SPONSORSHIP CERTIFICATE

Sb./Mr./Dr./Prof. _____
is a bonafide teacher of our college. He/She is sponsored to attend One day workshop on "NANO FLUIDS: APPLICATIONS FOR HEAT TRANSFER AND ENERGY SYSTEMS" on 28 September 2017.

Date: _____
Signature of the Principal

Workshop Brochure



National workshop on nano fluids

MOODBIDRI: The Mechanical Department of Alva's Engineering College conducted a national-level workshop on 'Nano Fluids' recently.

Dr Shuichi Torii, associate director and professor for Department of mechanical system engineering, Graduate School of Science and Technology, Kumamoto University, Japan, was inaugurated the workshop.

Spaeking at the inauguration, professor Torii said that students should take interest in research and comprehend the developments in the field of Nano Fluids.

"There is ample scope for individual growth as well as technological advancement in this area. This ideal can be implemented effectively through the academic MoU signed between the Alva's En-

gineering College and Kumamoto University, Japan."

Managing trustee of Alva's Education Foundation, Vivek Alva said, "This research project shall be of benefit to both, students and faculty. Japanese technology is indeed a milestone for us, and we have so much to learn from the country. Hence taking their assistance in order to grow is a progressive move, and this MoU shall prove to be beneficial in all ways."

"Japanese ways of technological advancements are models for us. Their discipline, modus operandi and time management are among many things we can learn from them," said Dr Peter Fernandes, principal of the AIET.

DH News Service

'ನಾನೋ ಫ್ಲಾಯಿಡ್' ರಾಷ್ಟ್ರಮಟ್ಟದ ಕಾರ್ಯಾಗಾರಕ್ಕೆ ಚಾಲನೆ ವಿದ್ಯಾರ್ಥಿಗಳು ಸಂಶೋಧನಾ ಮನೋಭಾವ ಬೆಳೆಸಿಕೊಳ್ಳಲಿ

ಸಿ. ವಿಶ್ವವಾಣಿ ಸುದ್ದಿಮಳೆ ಮೂಡುನಿರಿದೆ

ವಿದ್ಯಾರ್ಥಿಗಳು ಸಂಶೋಧನಾ ಮನೋಭಾವ ಬೆಳೆಸಿಕೊಳ್ಳಲಿ ಎಂದು ಜವಾಬ್ದಾರಿ ಕುಳಿಸಿಕೊಂಡು ವಿವಿಧ ಸರ್ವಾಯಕ ನಿರ್ದೇಶಕರು ಮತ್ತು ಪ್ರಾಧ್ಯಾಪಕರು ಈ ಕುರಿತು ಕೋರಿ ವೇಳೆಬಿಟ್ಟರು.

ಮಿಡಾಸಿನ್ ಆಲ್ಬಾನ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನಲ್ಲಿ ನಿಕಲ್ ಎಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದಿಂದ ಆಯೋಜಿಸಿದ 'ನಾನೋ ಫ್ಲಾಯಿಡ್' ರಾಷ್ಟ್ರಮಟ್ಟದ ಕಾರ್ಯಾಗಾರದ ಉದ್ಘಾಟನೆ ಮಾಡಲಾಯಿತು.

ನಾನೋ ಫ್ಲಾಯಿಡ್ ಕ್ಷೇತ್ರದಲ್ಲಿ ಆಗಿನಿರುವ ಅಂಶ ಅನಿವಾರ್ಯವಾಗಿ ವಿದ್ಯಾರ್ಥಿಗಳು ಅರಿತು ಅಧ್ಯಯನ ಮಾಡಬೇಕು. ಆಲ್ಬಾನ್ ಮತ್ತು ಕುಮಾರವೇಣಿ ವಿವಿ ಸಮಾವೇಶ ಕ್ಷೇತ್ರಕ್ಕೆ ಒತ್ತಾಯದಿಂದ



'ನಾನೋ ಫ್ಲಾಯಿಡ್' ರಾಷ್ಟ್ರಮಟ್ಟದ ಕಾರ್ಯಾಗಾರವನ್ನು ಈ. ಕುಮಾರಿ ತೋರಿ ಉದ್ಘಾಟಿಸಿ ಮಾಡಲಾಯಿತು.

ವಿದ್ಯಾರ್ಥಿಗಳ ಮನವಿಯು ಮತ್ತು ಉತ್ತಮ ಸಂಶೋಧನೆ ಸಾಧ್ಯ ಎಂದು ಎಂದರು.

ಕಾಲೇಜಿನ ಪ್ರಾಂಶುಪಾಲರು ಈ. ಪೀಟರ್ ಫೆರ್ನಾಂಡಿಸ್, ತಿರುನೆಲ್ವೇಲಿಯ ವಿವಿ

ಎಸ್. ಕಾಲೇಜಿನ ಉಪಪ್ರಾಂಶುಪಾಲರು ಈ. ಪಿ. ನೆಲ್ವ ಕುಮಾರ್, ಸುರೇಶ್ ಎಸ್. ಪಟೇಲರು ಪ್ರಾಧ್ಯಾಪಕರು ಈ. ಕೆ. ಎಸ್. ಪ್ರಭು ಇದ್ದರು.

6 ಸಂಶೋಧನಾ ಕಾರ್ಯಾಗಾರದ ವಿದ್ಯಾರ್ಥಿ, ಕಾರ್ಯದರ್ಶಿ, ಕಾರ್ಯದರ್ಶಿಗಳ ಸಮಯದಲ್ಲಿ ಆಲ್ಬಾನ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಮತ್ತು ಕುಮಾರವೇಣಿ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೆನೇಟ್ ಸಭೆಯಲ್ಲಿ ಪ್ರಮುಖ ಮೈಲಿಗಟ್ಟಿದ್ದು, ಜವಾಬ್ದಾರಿ ಉತ್ತಮ ತಂತ್ರಜ್ಞಾನದ ಮೇಲೆ ಮಾರ್ಗದರ್ಶನವಾಗಬಹುದು ಎಂದು ಸಂಶೋಧನಾ ಕೋಶದವರಿಗೆ ಕಲೆನುಗುಣವು ಮುಕ್ತವಾಗಿದೆ.

-ವಿವೇಕ್ ಆಲ್ವಾನ್ ಕಿತ್ತೂರು ಪ್ರತಿಷ್ಠಾನದ ಪ್ರತಿಷ್ಠೆ

http://www.bellelevision.com/index.php?action=topnews_print&type=18288



“STUDENT EXCHANGE PROGRAM - DISCUSSION”

REPORT IN BRIEF

Dr. Shuichi Torii, Assistant Director (College of Cross-Cultural and Multidisciplinary Studies) and Professor in the Department of Mechanical System Engineering, Kumamoto University – Japan addressed about opportunities available at Kumamoto University to pursue higher studies at Kumamoto University, Japan on September 28, 2017. He said that students can pursue MS in Japan under JASSO Scholarship and Ph.D by JSPS. He also spoke on Sakura Exchange Program.



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



Discussion about MoU matters, exchange of faculty and students



Prof. Shuichi Torii Interaction with students



Prof. Shuichi Torii Interaction with students

Shuichi Torii
H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225



Alva's Students Participated and Presented Research paper in
The 12th International Student Conference on
Advanced Science and Technology (ICAST) at Kaohsiung, Taiwan
during November 23 – 25, 2017



Organized by
The Global Joint Education Center for Science and Technology
(GJEC) of Graduate School of Science and Technology (GSST), *Kumamoto University, Japan*



Mr. Hithesh Gopal Shetty, Mr. Prajesh Yogeshbhai Ashra and Mr. Sandesh Gananath Shetty students from Mechanical Engineering were participated and presented paper in 12th International Student Conference on Advanced Science and Technology (ICAST 2017), during 23 – 25 November, 2017, Taiwan organized by The Global Joint Education Center for Science and Technology (GJEC) of Graduate School of Science and Technology (GSST), Kumamoto University, Japan

Sl. No	Title of the Paper presented	Presenter
1	Effect of Reflow and Isothermal Aging Temperature on Sn-Pb and Pb-free Solder/Substrate Interfacial Regions	Mr. Hithesh Gopal Shetty
2	Study of Vibrational Analysis of Cantilever Beam Made by Natural Hybrid Fibre Composites	Mr. Prajesh Yogeshbhai Ashra



IXEIST

ICAST 2017 Kaohsiung



Certificate of Completion

This certificate recognizes that

PRAJESH YOGESHBHAI ASHRA

of

Alva's Institute of Engineering and Technology
(Visvesvaraya Technological University)

was a participant
of 12th International Student Conference on
Advanced Science and Technology (ICAST)
from 23rd to 25th November, 2017
at National Kaohsiung First University of Science and Technology.

Bor-Tsuen Lin

prof. Bor-Tsuen Lin
Dean, College of Engineering
National Kaohsiung First University of Science and Technology,
Taiwan, R.O.C.

Skomel
H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

NKEUST

ICAST 2017 Kaohsiung



Certificate of Completion

This certificate recognizes that

SANDESH G SHETTY

of

Alva's Institute of Engineering and Technology
(Visvesvaraya Technological University)

was a participant
of 12th International Student Conference on
Advanced Science and Technology (ICAST)
from 23rd to 25th November, 2017
at National Kaohsiung First University of Science and Technology.

Bor-Tsuen Lin

prof. Bor-Tsuen Lin
Dean, College of Engineering
National Kaohsiung First University of Science and Technology,
Taiwan, R.O.C.

NKEUST

Skand
H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Shobhavan Campus, Mijar, Moodbidri - 574225

(Affiliated to Visvesvaraya Technological University, Belagavi)

Approved by AICTE, New Delhi & Recognized by Government of Karnataka)



Activities Under MOU with “Kumamoto University” 2018-19



Kumamoto University

Kumamoto University
Japan



**SAKURA EXCHANGE PROGRAM IN SCIENCE
(JAPAN-ASIA YOUTH EXCHANGE PROGRAM IN SCIENCE)**

SUPPORTED BY

KUMAMOTO UNIVERSITY, JAPAN

AND

JAPAN SCIENCE AND TECHNOLOGY AGENCY (JST),

GOVERNMENT OF JAPAN

(JANUARY 28 TO FEBRUARY 04, 2018)

Schedule of Sakura Exchange Program

Content	Session	Events
Day 1– Jan 28, 2018 (Sunday)		Arrival to Hotel Washing Tone, Kumamoto
Day 2– Jan 29, 2018 (Monday)	Forenoon	to move Kumamoto University
	Afternoon	Introduction and campus visit. Lecture on Lecture on Advanced Research by Prof. Torii
Day 3– Jan 30, 2018 (Tuesday)	Forenoon	Mg (Kumadai) Research Center tour in the campus
	Afternoon	Lecture on advanced research by Dr .Tsuyoshi Mayama
Day 4– Jan 31, 2018 (Wednesday)	Forenoon	Visit to Bio-Hybrid System followed by Lecture – Prof. Nakanishi)
	Afternoon	Visit to advanced Material Processing/Shock Wave and Condensed Matter Research Center (Lecture)– Prof. Hokamoto
Day 5– Feb 01, 2018 (Friday)	Forenoon	Factory tour (Hitachi Zosen Corporation, Ariake Works)
	Afternoon	Visit to Kumamoto City Seibu Incineration Plant
Day 6 – Feb 02, 2018 (Saturday)	Forenoon	To receive certificate of achievement
	Afternoon	Conclusion by Presentation at Kumamoto University
Day 7 – Feb 03, 2018 (Sunday)	Forenoon	To move to Fukuoka from Kumamoto
	Afternoon	visit the museum at Fukuoka
Day 8– Feb 04, 2018 (Monday)	Forenoon	Departure from Fukuoka Airport

Students/Faculty visited Japan under Sakura Exchange Program

Sl No	Name	Department
1	Priya Pradeep Rane (F)	Civil Engg
2	Anushree Shettigar (F)	Electronic and Communication Engg
3	Chandra Shreyas Prasad (M)	Information Science and Engg
4	Aishwarya Saraswathi H M (F)	Computer Science and Engg
5	Kartik Ganiga (M)	
6	Ashwin Ashok Padmashali (M)	Mechanical Engg
7	Prajesh Yogeshbhai Ashra (M)	
8	Hithesh Gopal Shetty (M)	
9	Sandesh Gananath Shetty (M)	
10	Satyanarayan (M)	Faculty/Mechanical Engg

DAY 1



Warm welcome by Prof. Shuichi Torii, Assistant Director,
Kumamoto University, Japan at Fukuoka airport

AIET team landed at Fukuoka international airport on Sunday (Jan 28) in the noon Dr. Shuchi Torii was welcomed by us. It was very cold day ($0 - 1^{\circ}\text{C}$) which we never experienced in our life. Later, traveled to Kumamoto by bus provided by the University which was about 109 km from Fukuoka. All were accommodated at Washington Hotel Plaza, Kumamoto.



Washington Hotel Plaza, Kumamoto.

DAY 2



Fig: Introduction about Kumamoto University by Prof. S. Torii

Dr. Shuchi Torii addressed about the Sakura Exchange program in science and its importance. A video of history of Kumamoto University and the life of students in Kumamoto was shown. All were signed for the insurance till the duration of our stay. Prof Torii took us for University visit (north and south campus) in which international student welfare office, library, research labs and other department buildings were shown followed by Lecture on Advanced Research : Heat transfer, Nano fluid, Biomass by Prof. S Torii



Talk on Advanced Research: Heat transfer, Nano fluid, Biomass by Prof. S Torii

DAY 3



Lecture on Advanced Research Mg alloy Development by Dr .Tsuyoshi Mayama

On this day in the forenoon AIET team visited Mg Research Center, Department of Materials Science and Engineering. In the afternoon session, Dr. Tsuyoshi Mayama (Associate Professor, Kumadai) gave lecture on development of Kumadai Magnesium alloy and taken to the magnesium production research lab.

During the same day, we visited one of the oldest shrines (temple). We all prayed. The birds and animals over there are very friendly and never run away while we go near them instead they use to come near to us.



Visit to Shrine

DAY 4



Prof. Yoshitaka Nakanishi, Vice Chair, Kumamoto University – Innovation and Collaboration Center (KUICC)

In the morning session we had a lecture on *Bio-Engineering* by Prof. Yoshitaka Nakanishi. Insite on the engineering application in biological field was explained. He gave us lots of idea and knowledge about the latest technology. He thanked India because his research projects were purchased by Indian firms.



Visit to Bio-Hybrid System Laboratory

We experienced the temperature of -15°C in the testing chamber of aero plane landing gear which is behind us in the photo.

In the afternoon session we had the lecture on advanced material forming processing and introduction to explosive welding by **Prof. Kazuyuki Hokamoto**. After his lecture we visited the Shock Wave and Condensed Matter Research Center at which a demo was shown to us.



With Prof. Kazuyuki Hokamoto, at IPPS, Kumamoto University



With Dr. S. Tanaka, at Shock Wave and Condensed Matter Research Center

DAY 5



With Executive Officers, Hitz Hitachi Zosen, Ariake Workss



Safety kits were provided before to visit to Marine diesel engines plant

AIET team visited Hitachi Zosen Corporation – Sakai plant in the morning. Company manufactures large ship of diesel engine and nuclear reactor vessels. We glanced entire production unit and also R&D department.



Visit to Kumamoto City Seibu Incineration Plant

Later we all visited Kumamoto City Seibu Incineration Plant in the afternoon. Waste at Incineration plant will be burnt to produce electricity. By-products like ash will be used for making bricks or road constructions.



We enjoyed hot spring at Seibu Incineration Plant

Day 6



Certificate of Achievement

All were awarded with certificate of achievement from Sakura Science Exchange Program in Science on 4/02/2018 by Dr. Shuchi Torii concluding that we are the members of Sakura Science Club.



Memento to Prof. Shuchi Torii by AIET students

On the last day of stay in Kumamoto also a day when we were awarded with certificate of achievements, we presented Prof. Shuchi Torii a gift on account of everyone.

DAY 7



Fukuoka Tower. View from tower

We departed from Kumamoto in the morning reached to Fukuoka, where we had our lunch in restaurant below tower. We also went up to the tower and experienced the wonder full view of Fukuoka city.



Places enjoyed at Fukuoka

DAY 8



Farewell by Prof. Shuichi Torii at Fukuoka airport



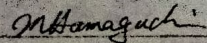
Finally we departed from Fukuoka International Airport in Cathay Dragon Flight to India and this entire journey was best experience of our life ever.

CERTIFICATE OF ACHIEVEMENT

This is to certify that

Mr. Gopal Shetty Hithesh

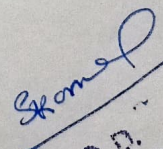
*has successfully achieved the course of Japan-Asia Youth Exchange
program in Science(SAKURA Exchange Program in Science)
administered by Japan Science and Technology Agency.
Kumamoto University ran the course from January 28 to February 4 in 2018.
We welcome you as a member of the Sakura Science Club.*


HAMAGUCHI MICHINARI, M.D., PH.D.
PRESIDENT
JAPAN SCIENCE AND TECHNOLOGY AGENCY



Date: February 4, 2018

No: 17105863


H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

CERTIFICATE OF ACHIEVEMENT

This is to certify that

Mr. Ashra Prajesh Yogeshbhai

*has successfully achieved the course of Japan-Asia Youth Exchange
program in Science(SAKURA Exchange Program in Science)
administered by Japan Science and Technology Agency.
Kumamoto University ran the course from January 28 to February 4 in 2018.
We welcome you as a member of the Sakura Science Club.*

M. Hamaguchi

HAMAGUCHI MICHINARI MD, PH.D.
PRESIDENT
JAPAN SCIENCE AND TECHNOLOGY AGENCY



Date: February 4, 2018

No: 1705802

CERTIFICATE OF ACHIEVEMENT

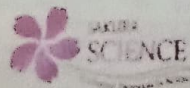
This is to certify that

Mr. Shetty Sandesh Gananath

*has successfully achieved the course of Japan-Asia Youth Exchange
program in Science(SAKURA Exchange Program in Science)
administered by Japan Science and Technology Agency.
Kumamoto University ran the course from January 28 to February 4 in 2018.
We welcome you as a member of the Sakura Science Club.*

M. Hamaguchi

HAMAGUCHI MICHINARI MD, PH.D.
PRESIDENT
JAPAN SCIENCE AND TECHNOLOGY AGENCY



Date: February 4, 2018

No: 1705802

Shetty
H. J. J.
Prof. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODEBURI - 574 225

CERTIFICATE OF ACHIEVEMENT

This is to certify that

Mr. Padmashali Ashwin Ashok

has successfully achieved the course of Japan-Asia Youth Exchange
program in Science(SAKURA Exchange Program in Science)
administered by Japan Science and Technology Agency.
Kumamoto University ran the course from January 28 to February 4 in 2018.
We welcome you as a member of the Sakura Science Club.

M Hamaguchi
HAMAGUCHI MICHINARI, MD, Ph.D.
PRESIDENT
JAPAN SCIENCE AND TECHNOLOGY AGENCY



Date: February 4, 2018

No: 17105861
PA - 000417



ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಲ್ವಾ ಶಿಕ್ಷಣ ಪ್ರತಿಷ್ಠಾನದ ಅಧ್ಯಕ್ಷ ಡಾ|| ಎಂ. ಮೋಹನ ಅಳು ಶುಭ ಹಾರೈಸಿದರು.

ಜಪಾನ್ ಕುಮಾಮೊಟೊ ವಿ.ವಿ.: ಆಲ್ವಾಸ್ ವಿದ್ಯಾರ್ಥಿ ವಿನಿಮಯ

ಮೂಡಲಿನಿಂದ, ಜ. 16: ಮೀಸಲಿರುವ ಆಲ್ವಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜು ಮತ್ತು ಜಪಾನಿನ ಕುಮಾಮೊಟೊ ವಿ.ವಿ. ನಡುವಣ ವಿದ್ಯಾರ್ಥಿ ವಿನಿಮಯ ಕಾರ್ಯಕ್ರಮವು ಆಲ್ವಾಸ್ ನ 9 ವಿದ್ಯಾರ್ಥಿಗಳು ಜಪಾನಿಗೆ ತೆರಳಲಿದ್ದಾರೆ.

ಜಪಾನ್ ಸರ್ಕಾರದ ಆಹ್ವಾನದ ಮೇರೆಗೆ ಜ. 28ರಿಂದ ಫೆ. 4ರ ವರೆಗೆ 'ಜಪಾನ್ - ಉನ್ನತ ವಿದ್ಯಾಭ್ಯಾಸ ಯುವ ವಿನಿಮಯ ಕಾರ್ಯಕ್ರಮ'ದ ಸ್ವರೂಪ ಕಾರ್ಯಕ್ರಮ ಸಂಯೋಜಿತ ಡಾ|| ಸತ್ಯನಾರಾಯಣ ನೇತೃತ್ವದಲ್ಲಿ ಆಲ್ವಾಸ್ ವಿದ್ಯಾರ್ಥಿಗಳ ತಂಡ ಜಪಾನ್ ನಲ್ಲಿ ಕಿರು ಅಧ್ಯಯನ ನಡೆಸಲಿದೆ. ಈ ವಿದ್ಯಾರ್ಥಿ

ಗಳ ಸಂಸ್ಕರಣ ಖರ್ಚು ವೆಚ್ಚವನ್ನು ಜಪಾನ್ ಸರ್ಕಾರದ 'ಜಪಾನ್ ಸ್ಕೆನ್ಸ್ ಆಂಡ್ ಟೆಕ್ನಾಲಜಿ (ಜೆಸ್ಟೆಟ್)' ಭರಿಸಲಿದೆ.

ಜಪಾನಿನ ಕುಮಾಮೊಟೊ ವಿ.ವಿ.ಯೊಂದಿಗೆ ಒಡಂಬಡಿಕೆ ಮಾಡಿಕೊಂಡ ದೇಶದ ನಾಲ್ಕನೇ ಸಂಸ್ಥೆ ಎಂಬ ಹೆಗ್ಗುಲೆ ಆಲ್ವಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನದ್ದಾಗಿದೆ.

ಆಲ್ವಾಸ್ ಶಿಕ್ಷಣ ಪ್ರತಿಷ್ಠಾನದ ಅಧ್ಯಕ್ಷ ಡಾ|| ಎಂ. ಮೋಹನ ಅಳು ಟ್ರಸ್ಟಿ ಓದೇಕ್ ಆಳ್ವ ಕ್ರಾಂತಿಪಾಲ ಡಾ|| ಸೀತಲ್ ಭರ್ನಾಂಡಿಸ್ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಅಭಿನಂದಿಸಿ, ಶುಭ ಹಾರೈಸಿದ್ದಾರೆ.

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Kumamoto University

7th International Engineering Symposium (IES 2018)



IES 2018



Prof. K V Suresh



Kumaraswamy M C

K V Suresh, Professor and **Kumaraswamy M C** Assistant Professor in the Department of Mechanical Engineering from Alva's Institute of Engineering and Technology Karnataka, Moodbidri, Mangalore participated and presented their Research Papers in 7th International

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Engineering Symposium (IES 2018) held during March 7– 9, 2018 at Kumamoto University, Japan.

Papers presented

Title of the paper	Authors
Assessment of Thermal Contact Resistance for Brass and Bronze Metal Alloys	Kumar swamy M C and Satyanarayan
Effect of Injection Pressure on Performance and Emission Characteristics of CI Engine Fuelled With Honge, Hybrid Bio-Fuel with Diesel	K V Suresh , Peter Fernandes and Raju K



Prof. K V Suresh and Mr. Kumarswamy with Prof. Hokamoto at his office

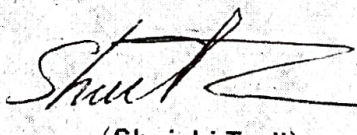
7th INTERNATIONAL ENGINEERING SYMPOSIUM (IES2018)
March 7-9, 2018

Kumamoto University, JAPAN

March 9, 2018

Participation Certificate

This is to certify that **Mr K V Suresh** has participated and presented a technical paper in the 7th International Engineering Symposium (IES2018) held at Kumamoto University, Kumamoto, Japan, during March 7-9, 2018.



(Shuichi Torii)

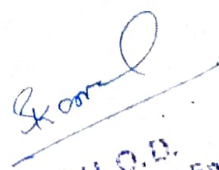
Convener – IES2018

Professor, Department of Mechanical System Engineering
Kumamoto University

2-39-1, Kurokami, Kumamoto, 860-8555, JAPAN

Phone & Fax: +81-96-342-3756

E-mail: torii@mech.kumamoto-u.ac.jp

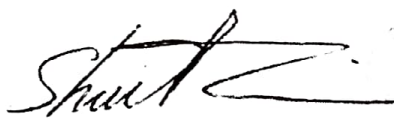


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Kva's Institute of Engg. & Technology
Majar, MOOLGIDRI - 574 225

March 9, 2018

Participation Certificate

This is to certify that **Mr Kumar Swamy M C** has participated and presented a technical paper in the 7th International Engineering Symposium (IES2018) held at Kumamoto University, Kumamoto, Japan, during March 7-9, 2018.



(Shuichi Torii)

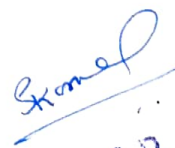
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Kumamoto University

ONE DAY NATIONAL WORKSHOP ON ONE DAY WORKSHOP ON ADVANCES IN WELDING PRACTICES



Fig: Inauguration by Dr. K Hokamoto and Dr. Raghukandan

Department of Mechanical Engineering, AIET– Mijar in association with Institute of Pulsed Power Science (IIPPS), Kumamoto University, Japan organized a One day workshop on Advances in Welding Practices for engineering students, researchers, academicians and industrialists. The inauguration of the workshop was held at AIET-Mijar on 22nd March, 2018. Dr. Kazuyuki Hokamoto, Professor,

Institute of Pulsed Power Science (IPPS) and Department of Mechanical system Engineering, Kumamoto University, Japan was the chief guest.

In his inaugural address, Dr. Hokamoto expressed MOU should not be only in papers , it should be exchange of knowledge, sharing the ideas between both institutes.

Dr. K. Raghukandan, Professor, Department of Manufacturing Engineering, Annamalai University, Tamilnadu was the guest of honour.

Presiding over the programme, Principal, AIET- Mijar, Dr. Peter Fernandes congratulated the mechanical department for taking initiative of organizing workshop on Advances in welding practices.

Pramod V. B. compered the programme. Convener and head of department Dr. Harishanand K. S. welcomed the resource persons, delegates and gathering, Coordinator Dr. Satyanarayan proposed a vote of thanks. Prof. Suresh K V and other faculties of different departments were present at the inaugural ceremony.



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ಆಲ್ವಾಸ್‌ನಲ್ಲಿ ಆಧುನಿಕ ವೆಲ್ಡಿಂಗ್ ತಂತ್ರಜ್ಞಾನದ ಕಾರ್ಯಾಗಾರ

ಮೂಡುಬಿದಿರೆ: ಆಧುನಿಕ ವೆಲ್ಡಿಂಗ್ ತಂತ್ರಜ್ಞಾನದ ಕುರಿತಾದ ಕಾರ್ಯಾಗಾರವು ಮಿಜಾರಿನ ಆಲ್ವಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನಲ್ಲಿ ಜವಾನಿನ ಕುಮಾರ್‌ನೊಡನೆ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಇನ್ಸ್ಟಿಟ್ಯೂಟ್ ಆಫ್ ವಲ್ಡ್ಸ್ ವೆವರ್ ಸೈನ್ಸ್ ಇವರ ಸಹಯೋಗದೊಂದಿಗೆ ನಡೆಯಿತು.

ಕುಮಾರ್‌ನೊಡನೆ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಡಾ. ಕರ್ಪುಯುಕಿ ಹೊಕಮೋಟೋ ಮಾತನಾಡಿ, ಶೈಕ್ಷಣಿಕ ಓದಲುಗಳಿಗೆ ಕೇವಲ ಕಾಗದದಲ್ಲಿ ಉಳಿಯದೆ ಕೈಶಲ ಮತ್ತು ಜ್ಞಾನದ ವಿನಿಮಯವಾಗಬೇಕು ಮತ್ತು ಈ ಪ್ರಕ್ರಿಯೆ ನಿರಂತರವಾಗಿರಬೇಕು ಎಂದರು. ಆಲ್ವಾಮಲ್ಟಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಉತ್ಪಾದನಾ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದ ಪ್ರಾಧ್ಯಾಪಕ ಡಾ. ಕೆ. ರಘುಕಂದನ್, ಪ್ರಾಂಶುಪಾಲ ಡಾ. ಪೀಟರ್ ಫರ್ನಾಂಡಿಸ್, ವಿಭಾಗ ಮುಖ್ಯಸ್ಥ ಡಾ. ಹರೀಶಾನಂದ ಇದ್ದರು.



ಆಧುನಿಕ ವೆಲ್ಡಿಂಗ್ ತಂತ್ರಜ್ಞಾನದ ಕುರಿತಾದ ಕಾರ್ಯಾಗಾರವು ಮಿಜಾರಿನ ಆಲ್ವಾಸ್ ಎಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನಲ್ಲಿ ನಡೆಯಿತು.

ಮಿಜಾರಿನಲ್ಲಿ ವೆಲ್ಡಿಂಗ್ ತಾಂತ್ರಿಕತೆಗೆ ಪ್ರವೇಶಿಸಿದವರ ಕುರಿತು ಮಾಹಿತಿ

ದಯರ್ ಆಂತ್ಯೋದಯ ಯೋಜನೆ ರಾಷ್ಟ್ರೀಯ ಸರ್ಕಾರದ ಆಯೋಜನೆಯ ಆಧಾರದ ಮೇಲೆ ನಡೆಯಿತು

ವಿಶ್ವವಿದ್ಯಾಲಯದ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದ ಪ್ರಾಧ್ಯಾಪಕರು ಮಾತನಾಡಿದರು

ಆಲ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನಲ್ಲಿ ಕಾರ್ಯಕ್ರಮ ಆಧುನಿಕ ವೆಲ್ಡಿಂಗ್ ತಂತ್ರಜ್ಞಾನದ ಕಾರ್ಯಾಗಾರ

ಮೂಡುಬಿದಿರೆ: ಆಧುನಿಕ ವೆಲ್ಡಿಂಗ್ ತಂತ್ರಜ್ಞಾನದ ಕುರಿತಾದ ಒಂದು ದಿನದ ಕಾರ್ಯಾಗಾರ ಮಿಜಾರಿನ ಆಲ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನಲ್ಲಿ ಜವಾನಿನ ಕುಮಾರ್‌ನೊಡನೆ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಇನ್ಸ್ಟಿಟ್ಯೂಟ್ ಆಫ್ ವಲ್ಡ್ಸ್ ವೆವರ್ ಸೈನ್ಸ್ ಇವರ ಸಹಯೋಗದೊಂದಿಗೆ ನಡೆಯಿತು.

ಕುಮಾರ್‌ನೊಡನೆ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಡಾ. ಕರ್ಪುಯುಕಿ ಹೊಕಮೋಟೋ ಅವರು ಮಾತನಾಡಿ, ಶೈಕ್ಷಣಿಕ ಓದಲುಗಳಿಗೆ ಕೇವಲ ಕಾಗದದಲ್ಲಿ ಉಳಿಯದೆ ಕೈಶಲ ಮತ್ತು ಜ್ಞಾನದ ವಿನಿಮಯವಾಗಬೇಕು ಮತ್ತು ಈ ಪ್ರಕ್ರಿಯೆ ನಿರಂತರವಾಗಿರಬೇಕು ಎಂದು ಕರೆದೊತ್ತರು.

ಆಲ್ವಾಮಲ್ಟಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಉತ್ಪಾದನಾ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದ ಪ್ರಾಧ್ಯಾಪಕ ಡಾ. ಕೆ. ರಘುಕಂದನ್, ಆತಿಥೇಯ ಡಾ. ಪೀಟರ್ ಫರ್ನಾಂಡಿಸ್, ವಿಭಾಗ ಮುಖ್ಯಸ್ಥ ಡಾ. ಹರೀಶಾನಂದ ಇದ್ದರು.



ಫರ್ನಾಂಡಿಸ್ ಕಾರ್ಯಾಗಾರದ ಮುಖಾಂತರವು ಸ್ವಾಗತಿಸಿದರು. ಡಾ. ಕೆ. ರಘುಕಂದನ್ ಕಾರ್ಯಕ್ರಮ ನಿರ್ದೇಶಿಸಿದರು. ಸಂವಿಧಾನದ ಅನ್ವಯವಾಗಿ ನಡೆಯಿತು.

ವಿಭಾಗ ಮುಖ್ಯಸ್ಥ ಡಾ. ಹರೀಶಾನಂದ

Handwritten signature

H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
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Dr. M. Mohan Alva
Chairman, AIEE, Moodbidri

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Managing Trustee, AIEE, Moodbidri

Dr. Peter Fernandes
Principal, AIEE, Moodbidri

Conveners
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HOD, Dept. of Mech Engg., AIEE

Prof. Suresh K V
Dept. of Mech Engg., AIEE

Coordinators
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Email: scprabhu@gmail.com

Organizing Committee
Prof. Harish K
Prof. G B Vaggar
Prof. Hemanth Suvarna
Prof. Sadashiv Bellubbi
Prof. Kumaraswamy

ABOUT THE INSTITUTE

Alva's Institute of Engineering and Technology (AIET) is a premier Engineering Institute of Alva's Education Foundation established in the year 2008. Approved by All India Council for Technical Education, New Delhi and affiliated to Visvesvaraya Technological University, Belgaum, Karnataka. AIET is located adjacent to Moodbidri-Mangalore National road which is 24 Kms from Mangalore International airport. It has a lush green surrounding as part of the Alva's Shobhavana campus which has more than two thousand varieties of herbal plants. International and National Conferences are held on regular basis on different themes. More than 50 Guest facilities are conducted every year spanning from current topics in each field to specialized topics from experts. E-learning enabled through LDU/SAT training programme in association with ISEO. AIET has signed MOU's with Karnataka University, Japan and European Universities. Live projects and internships in every semester help students to bridge the industry-academia gap. In short, AIET is synonymous with discipline, practicality, quality and fulfillment.

COURSES OFFERED

- Mechanical Engineering
- Civil Engineering
- Computer Science & Engineering
- Electronics & Communication Engineering
- Information Science & Engineering
- Master of Business Administration
- M.Tech in Thermal Power Engineering
- Computer Science & Engineering
- AIET Design & Embedded system

ALVA'S EDUCATION FOUNDATION MOODBIDRI

"Building a Better Tomorrow"

One Day Workshop on Advances in Welding Practices

22nd March 2018

Organized by
Department of Mechanical Engineering
Alva's Institute of Engineering & Technology, India
Shobhavana Campus, Mijar, Moodbidri - 574225
Website: www.aict.org.in
IN ASSOCIATION WITH
Institute of Pulsed Power Science (IPPS)
Kumamoto University, Japan

ABOUT THE DEPARTMENT

Department of Mechanical Engineering was established in the year 2009 in intake of 60 and has sanctioned intake of 180 from academic year 2014-15. The Post Graduate course, M.Tech in Thermal Power Engineering was introduced from the academic year 2012-13 with an intake of 12 students. Department is recognized as a research center in AICTE. Department is actively involved in a seminar and entrepreneurship activities in association with professional bodies. The main objective of the department is to provide academic excellence, technology and service based education in Mechanical Engineering. The department has started the Direct research training scheme in this campus to employ in the area of Alternative Fuels.

Department vision is to develop Quality Mechanical Engineers to meet the ever growing and ever changing needs of the economy. To attain rank in engineering students with best knowledge and latest skills in various computerized tools in the current student. The Department is committed to provide high quality academic education at undergraduate and post graduate level in addition to that of all examination with best teaching learning process. Dedicated continuously to develop the overall personality of the students through comprehensive scheme of co-curricular and extra-curricular activities.

ABOUT WORKSHOP

The objective of the workshop is to introduce the participants to the emerging trends in the area of Welding.

Highlights:

- To expose faculty, students and students to the recent developments in the area of welding.
- Medicine: Exposure to various computerized welding.
- Discussion on Underwater explosion welding.
- Mechanical and metallurgical analysis of industrial grade computerized welding.
- Exposure and personal mental stimulation by visiting of computerized welding in comparison.
- Exposure to welding.

RESOURCE PERSONS

Dr. Kazuyuki Hokamoto
Professor
Institute of Pulsed Power Science and Dept. of Mechanical System Engg.
Kumamoto University, Japan

Dr. K. Raghukandan
Professor
Dept. of Manufacturing Engg., Anna Mariai Tamilnadu

ELIGIBILITY FOR PARTICIPATION

Program is open to all students, research scholars, industrialists and teaching faculty from technical, science institutes in the Department of Mechanical/Production/Manufacturing/Material Science and related disciplines.

REGISTRATION FEE

Rs. 750/- for students, Rs. 600/- for research scholars. Faculty from academic institutions and industries Demand Draft should be drawn in favor of The Principal, AIEE, Moodbidri, payable at Moodbidri, Mangalore.

ACCOMMODATION

Limited accommodation can be provided to outstation participants on shared basis in the hotel on prior request. There is nominal charge for boarding and lodging.

HOW TO REGISTER

Registration form is available from the brochure or can be downloaded from the College website. The completed form should be sent to the following address. Also scanned copy of the form and DD may be forwarded to the mail ID given below.

Dr. Satyanarayan
Prof. Sharathchandra Prabhu
Workshop Coordinator
Workshop on
Advances in Welding Practices
Department of Mechanical Engineering
Alva's Institute of Engineering & Technology
Mijar, Moodbidri - 574225, Karnataka
satyanarayankammar@gmail.com
scprabhu@gmail.com

Telephone No: 08258-262725
9964819600, 8073758795
Fax: 08258-262726

IMPORTANT DATES

Last date for receiving application: **15 March 2018**
Last date for confirmation of Participation: **20 March 2018**

One Day Workshop on Advances in Welding Practices

22nd March 2018

Registration form

- Name: _____
- Designation: _____
- Qualification: _____
(Degree, Specialization)
- Experience: _____
- Institution: _____
- Whether the college is Affiliated to VTU: Yes/No
- Address for communication: _____

Phone: _____
Mobile: _____
Email ID (compulsory): _____

B. Payment Details:

Bank: _____
DD No.: _____
Amount: Rs. _____
Date: _____

Signature of the applicant: _____

SPONSORSHIP CERTIFICATE

Mr./Ms./Dr./Prof. _____ is a bonafide teacher of our college. He/She is sponsored to attend One day workshop on "ADVANCES IN WELDING PRACTICES ON 22 March 2018."

Date: _____
Signature of the Principal: _____

Skomal

H.O.D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225



Alva's INSTITUTE OF ENGINEERING & TECHNOLOGY

Shobhavana Campus, Mijar, Moodbidri - 574225
Mangalore, D.K.

(An ISO 9001:2008 Certified Institution)
(A Unit of Alva's Education Foundation @, Moodbidri)



DEPARTMENT OF MECHANICAL ENGINEERING

In association with
INSTITUTE OF PULSED POWER SCIENCE (IPPS)
Kumamoto University Japan



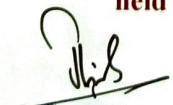
This is to certify that Mr./Dr./Mrs/Ms.

of attended the

ONE DAY WORKSHOP ON ADVANCES IN WELDING PRACTICES

held on 22nd March - 2018


Coordinator
(Dr. Satyanarayan)


Convenor
(Dr. Harishanand K.S.)


Principal
(Dr. Peter Fernandes)

外本和幸
Dr. Kazuyuki Hokamoto
(Professor
Kumamoto University, Japan)

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Shobhavan Campus, Mijar, Moodbidri - 574225

(Affiliated to Visvesvaraya Technological University, Belagavi)

Approved by AICTE, New Delhi & Recognized by Government of Karnataka)



Activities Under MOU with “Kumamoto University” 2019-20



Kumamoto University

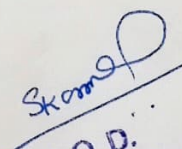
Kumamoto University
Japan



Kumamoto University



Mr. Rahul Machayaa successfully completed his **Master Course** at Kumamoto University, Japan. He took admission in the Month of November 2018 and completed in the year 2020. He worked under the guidance of Dr. Kazuyuki Hokamoto, project titled as "*Explosive welding of nickel and tin using underwater shockwave*". Presently working in Kawasaki Company, Japan


H.O.D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

June 8, 2018

Certificate of Admission

Home country or area India

Name KAMBEYANDA, Rahul Machaiah

Date of birth July 24, 1996

This certifies that the above-mentioned person has been admitted as a student to the Master's Course of International Joint Education Program (IJE) in Graduate School of Science and Technology, Kumamoto University

Date of enrollment October 1, 2018

Expected course duration 24 months

Department Mechanical and Mathematical Engineering

Education program Mechanical Engineering

Supervisor Professor Kazuyuki HOKAMOTO

Fusao Ichikawa



(Official Seal)

Fusao ICHIKAWA, D. Sci.
Dean
Graduate School of Science and Technology
Kumamoto University

H. O. D.
H. O. D.
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225



8th International Engineering Symposium (IES 2018) Kumamoto University, Kumamoto Japan

Brief Report

Twelve students (11Mech+1 Civil) and three faculties (Mechanical) participated in International Engineering Symposium – 2019, from March 13 to 15, 2019 at Kumamoto University, Kumamoto Japan. After receiving the confirmation from Kumamoto University to participate in IES-2019, the team left to Japan on 11th March from Bangalore Airport to Fukuoka via Singapore (few students via Thailand) reached Kumamoto University on 12th March. Accommodation was provided at Crown Hills. All Students and Faculties successfully participated and presented their research papers in IES–2019. As part of IES all participants visited M/s ISEKI, Agriculture Automated equipment manufacturing Industry and Mount Aso the well-known active volcanic eruption point.

The details of the papers presented at IES -2019

Sl.NO.	Title of Paper	Name of Authors
Students		
01	Tribological characteristics of Spray Formed Al-Si Quaternary Alloys	Mr. Shikhar V Jain
02	Effect of compression ratio on the performance and emission characteristics of CI engine fuelled with Honge, hybrid bio-fuel with diesel	Miss. Seemeshwari
03	Performance and Emission Characteristics of CI Engine Fuelled With blends of Cardanol,Honge, bio diesel With Diesel.	.Miss. VijaylaxmiShivangutti
04	The performance and emission characteristics of a variable compression ratio engine operated with raw cardanolRicebran blends with diesel has been accepted for oral presentation.	Mr. Amogh D M
05	Review on High-temperature Pb-free Solder Alloys has been accepted for oral presentation	Mr. Harsha Raj
06	Effect of Injection Pressure on Performance and Emission Characteristics of CI Engine Fuelled with blends of Honge, Rice bran Bio diesel with Diesel	Mr. Vidish Shetty

07	Experimental Study of Solar Panel Using Phase Change Material	Mr. Jameson Keisham
08	Synthesis and Characterization of WC Particulates Reinforced Al7075 Matrix Composites via Two Step Melt Stirring Technique	Miss. Soufia N Shaikh
09	Compressive Property of Natural Fibres Treated with Alkali Solution Reinforced with Epoxy Resin	Mr. U Gobind
10	Flexural Properties of Banana and Sisal Hybrid Fiber Composite without Treatment	Mr. Bharathesh Hegde
11	Investigation on the performance and emission analysis of Al ₂ O ₃ nanoparticles as an additive to a B20 blend of lard oil methyl ester on a CI engine	Mr. Madhusudhan Khamitkar
12	Effect of Sea Water on Strength of Structural Concrete (Civil Engg)	Vishwanath Okram

Faculty

13	Study on Stress Analysis and Fatigue Damage Calculation for Civilian Aircraft Wing Attachment Bracket	Mr. Sagar B S
14	Corrosion and Wear Resistance of Nano Metal Oxide CeO ₂ Doped Aluminum.	Dr. Harishanand K S
15	A Study on Thermal Properties and Wear Characterization of Glass Fiber Hybrid Composite Materials	Mr. Gurushanth B Vaggar

Mr. Shikhar V Jain, from Dept. of Mechanical Engineering, selected for “**SPRING INTERNSHIP PROGRAMME – 2019**” at Kumamoto University, Japan, from March 13 to 18 and Awarded of Scholarship **80000** Japanese Yen from Govt. of Japan.

Mr. Shikhar also received AICTE - INAE Travel Grant Scheme (Govt. of India) to present paper in Japan, the scheme provided Reimbursement of 100% Registration and Visa Fee, 50% of the actual Airfare to travel Japan.



Group photo with external delegates



Photo at Kumamoto Campus



Participation certificate to Dr. Harishanand and Mr. G B Vaggar



Participation certificate to Mr. Sagar B S and Mr. Shihar V Jain



Participation certificate to Vishwanath Okram



At Mount Aso – Active Volcano site



AIET Team at [M/s ISEKI](#)

8th INTERNATIONAL ENGINEERING SYMPOSIUM (IES2019)

March 13-15, 2019

Kumamoto University, JAPAN

March 15, 2019

Participation Certificate

This is to certify that **Ms Vijaylaxmi P Shivanaguti** has participated and presented a technical paper in the 8th International Engineering Symposium (IES2019) held at Kumamoto University, Kumamoto, Japan, during March 13-15, 2019.



(Shuichi Torii)
Convener – IES2019

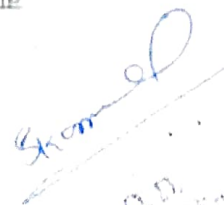
Professor
Department of Mechanical Engineering & Mechanical Systems
Graduate School of Science & Technology
Kumamoto University



2-39-1, Kurokami, Kumamoto, 860-8555, JAPAN

Phone & Fax: +81-96-342-3756

E-mail: torii@mech.kumamoto-u.ac.jp

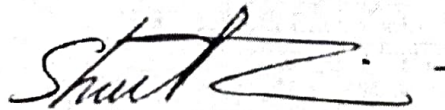


Dept. of Mechanical Engineering
Graduate School of Science & Technology
Kumamoto University
860-8555, JAPAN
TEL: 096-342-3756

March 15, 2019

Participation Certificate

This is to certify that **Prof Sagar B S** has participated and presented a technical paper in the 8th International Engineering Symposium (IES2019) held at Kumamoto University, Kumamoto, Japan, during March 13-15, 2019.

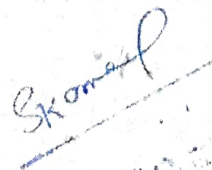


(Shuichi Torii)
Convener - IES2019

Professor
Department of Mechanical Engineering & Mechanical Systems
Graduate School of Science & Technology
Kumamoto University



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Kumamoto University
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Phone: +81-96-342-3756
Fax: +81-96-342-3756
E-mail: sagar@mech.kumamoto-u.ac.jp

Certificate of Completion

This is to certify that

Mr. SHIKHAR VIJAYRAJ JAIN

from AIET (India)

has successfully completed the

***JASSO Scholarship Program:
Spring Internship Program 2019***

at Graduate School of Science and Technology, Kumamoto University, Japan.

Period: March 12, 2019 - March 19, 2019 (8 days)

March 19, 2019



Fusao Ichikawa

Prof. Fusao ICHIKAWA

Dean

Graduate School of Science and Technology

Kumamoto University



ವಿಜಯವಾಣಿ ಜಿಲ್ಲೆ

ಜಪಾನ್‌ನಲ್ಲಿ ನಡೆದ 8ನೇ 'ಇಂಟರ್‌ನ್ಯಾಶನಲ್ ಇಂಜಿನಿಯರಿಂಗ್ ಸಿಂಪೋಸಿಯಮ್- 2019'ರಲ್ಲಿ ಆಲ್ಬಾನ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಮೂವರು ಪ್ರಾಧ್ಯಾಪಕರು ಒಳಗೊಂಡಂತೆ 18 ವಿದ್ಯಾರ್ಥಿಗಳ ತಂಡ ಭಾಗವಹಿಸಿತು. ಜಪಾನಿನ ಪ್ರತಿಷ್ಠಿತ ವಿಶ್ವವಿದ್ಯಾಲಯ ಕುಮಮೊಟೊ ಆಯೋಜಿಸಿದ ಕಾರ್ಯಕ್ರಮದಲ್ಲಿ ಮೆಕಾನಿಕಲ್ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದ 4ನೇ ವರ್ಷದ ವಿದ್ಯಾರ್ಥಿಗಳು ವಿಚಾರ ಮಂಡಿಸಿದರು.

**6th International Symposium
on
Explosion, Shock wave and High Strain-rate
Phenomena (ESHP)
19-21, March 2019, at Puduchery, India**

A Brief Report

International Symposium on Explosion, Shock wave and High Strain-rate Phenomena (ESHP) was held during **March, 19-21, 2019** at Ocean Spray, Puduchery, Tamilnadu. This conference was organized by Kumamoto University, Japan. **Dr. K Hokamoto** was Chair of the conference and **Dr. Satyanarayan** was one of the organizing committee of ESHP



Dr. K Hokamoto with delegates at Puduchery



Proceedings release by Dr. K Hokamoto, Dr. Manjith Singh and Dr. Raghukandan





Talk by Dr. K Hokamoto



Presenting Memento to Dr. K Hokamoto



Talk by **Dr. Satyanarayan**, Alva's Institute of Engineering and Technology
Title of the talk: Underwater Explosive Welding of Tin and Aluminium Plate



Presenting certificate to **Dr. Satyanarayan**



Group Photo



Dr. Kazuyuki Hokamoto with delegates



Dr. Satyanarayan with Japan colleagues Dr. Mori and Dr. Tanaka



Dr. Satyanarayan with China friend Mr. Gao-shin

International Conference on Laser Deposition:

Nanostructures, Heterostructures and 2D layers (iCOLD-2019)

A Brief Report

An *International Conference on Laser Deposition: Nanostructures, Heterostructures and 2D layers (iCOLD-2019)* was held during **November 27-29, 2019** at Alva's Institute of Engineering and Technology (AIET), Moodbidri. This conference was organized by Departments of Mechanical Engineering and Electronics & Communication Engineering of AIET in association with Indian Institute of Technology, Madras (IIT Madras).



Keynote Speakers **Dr. K Hokamoto** and **Dr. Shuichi Torii** participation in iCOLD at AIET

The Conference was inaugurated by Chief Guest *Dr. Karanam Uma Maheshwar Rao*, Director, NITK Surathkal at 9.30 AM on November 27, 2019; The inaugural program was graced by guests Dr. Burkhard Fechner, Coherent, Germany and Dr.M. S. Ramachandra Rao,

IIT Madras. Sri. Vivek Alva, Managing Trustee; Dr. Richard Pinto, Conference-chair and Dr. Peter Fernandes, Principal, AIET were present during the inaugural session. The Abstract/Souvenir book was released during the inaugural function.

There were 4 keynotes, 3 plenary talks and 22 invited lectures by renowned scientists from international institutes/companies such as **Kumamoto University**, CNRS UMR, France. The conference comprised plenary and invited talks, oral, poster presentations along with 2 industry talks. There was an exhibition of novel devices such as hydrogen fuel cells, methanol fuel cells, low frequency vibration sensors, gas sensors etc.



Talk by Dr. K Hokamoto and Presenting Memento to Dr. K Hokamoto

Title of the talk: Synthesis of various functional nano-material powders through underwater and under-liquid explosion phenomena



Talk by **Dr. Shuichi Torii** and Presenting Momento to **Dr. Shuich Torii**

Title of the talk: Enhancement of Heat Transfer Performance in Pipe Flow Using Graphene-Oxide-Nanofluid and Its Application



Poster Presentation valuation by Dr. Hokamoto



Dr. Kazuyuki Hokamoto photo captured in front of big conference poster



Prof. Hokamoto at AIET

Group Photo



ಆಲ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನಲ್ಲಿ ಅಂತರಾಷ್ಟ್ರೀಯ ವಿಚಾರ ಸಂಕಿರಣ ಪರಿಣಾಮಕಾರಿಯಾದ ಯೋಜನೆಗಳ ಅಗತ್ಯತೆ ಇದೆ

ದಿಗಂತ ವರದಿ, ಮೂಡಲದಿಂದ: ಇಂಜಿನಿಯರಿಂಗ್ ಎಂಬುದು ಕುರಿತು ಸ್ವನಿರ್ಮಿತ ಕ್ಷೇತ್ರ. ಇಂಜಿನಿಯರ್ ಆದವರು ತಮ್ಮ ಸ್ವತಃಸಹಜ ಗಳಿಗೆ ಸೀಮಿತರಾಗದೇ ಈ ವಿಶ್ವದ ಕ್ಷೇತ್ರದ ಎಲ್ಲಾ ಅಯಾಮಗಳಲ್ಲಿಯೂ ತಮ್ಮನ್ನು ತೊಡಗಿಸಿಕೊಳ್ಳಬೇಕು. ಕೆಲವು ಸಂದರ್ಭಗಳಲ್ಲಿ ನಾವು ಕಲಿತ ವಿಷಯಗಳಿಗಿಂತ ವಿಭಿನ್ನವಾದ ಕ್ಷೇತ್ರಗಳನ್ನು ಅಯ್ಕೆ ಮಾಡಿಕೊಳ್ಳಬೇಕಾಗುತ್ತದೆ. ಅಂತಹ ಯಾವುದೇ ಸಂದರ್ಭ ಬಂದರೂ ಅದನ್ನು ಸ್ವೀಕರಿಸಿ ಅದರಲ್ಲಿ ನಮ್ಮ ಕಾರ್ಯಕ್ರಮತೆಯನ್ನು ಸಾಬೀತುಪಡಿಸುವ ಅಗತ್ಯತೆ ಇರುತ್ತದೆ ಎಂದು ಸುರೇಶ್ ಎನ್.ಎಚ್.ಎಸ್. ನಿರ್ದೇಶಕ ಡಾ. ಕರನಂ ಉಮಾಮಹೇಶ್ವರ ಹೇಳಿದರು.

ಆಲ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಇಲೆಕ್ಟ್ರಾನ್ಯಾಲ್ಯಾನ್ಸ್ ಕಮ್ಯುನಿಕೇಶನ್ ಹಾಗೂ ಮೆಕ್ಯಾನಿಕಲ್ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗದಿಂದ ನಡೆಯುತ್ತಿರುವ ಲೆನರಾ ಡಿವೊಲಪ್‌ಮೆಂಟ್: ಇನ್ವೇಷ್ ಸ್ಪೆಕ್ಟ್ರಾ, ಫೆಬ್ರವರಿ 2019 ಮೂರು ದಿನಗಳ ಅಂತರಾಷ್ಟ್ರೀಯ ವಿಚಾರಸಂಕಿರಣದಲ್ಲಿ ಮುಖ್ಯ ಅತಿಥಿಯಾಗಿ ಭಾಗವಹಿಸಿ ಅವರು ಮಾತನಾಡಿದರು.

ಇಂದಿನ ಸಮಾಜಕ್ಕೆ ಪರಿಣಾಮಕಾರಿಯಾದ ಯೋಜನೆಗಳ ಅಗತ್ಯತೆ ಇದೆ. ಆದ್ದರಿಂದ ಇಂಜಿನಿಯರ್‌ಗಳಾದವರು ಯಾವುದೇ ಕ್ಷೇತ್ರದಲ್ಲಿ ದೃಢ, ಯಾವುದೇ ಯೋಜನೆಗಳನ್ನು ಮಾಡಿದರೂ ಅದು ಮಿತವ್ಯಯದ್ದಾಗಿದ್ದು ಸಮಾಜಕ್ಕೆ ಉತ್ತಮ



ಫಲವನ್ನು ನೀಡುವಂತಿರಬೇಕು ಎಂದರು.

ಅದ್ವೈತಿಕ ವಹಿಸಿದ್ದ ಆಲ್ವಾಸ್ ಶಿಕ್ಷಣ ಪ್ರತಿಷ್ಠಾನದ ಮ್ಯಾನೇಜಿಂಗ್ ಮಿಸ್ಟ್ರಿ ವಿವೇಕ್ ಆಲ್ವಾ ಮಾತನಾಡಿ, ಅಂತರಾಷ್ಟ್ರೀಯ ಸಮ್ಮೇಳನಗಳ ಆಯೋಜನೆಯ ಉದ್ದೇಶವನ್ನು ವಿದ್ಯಾರ್ಥಿಗಳು ಸರಿಯಾಗಿ ಅರ್ಥೈಸಿಕೊಳ್ಳಬೇಕು. ಇಲ್ಲಿ ಬರುವ ಸಂಪನ್ಮೂಲ ವ್ಯಕ್ತಿಗಿಂತ ಸುಗಮ ಜ್ಞಾನವನ್ನು ತಮ್ಮ ವೃತ್ತಿ ಜೀವನದಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬೇಕು. ಹಾಗೆಯೇ ತಮ್ಮ ವಿದ್ಯಾರ್ಥಿ ಜೀವನದಲ್ಲಿ ಕೈಗೊಳ್ಳುವ ಕ್ರಿಯಾತ್ಮಕ ಯೋಜನೆಗಳು ಸಮಾಜದಲ್ಲಿರುವ ಸಮಸ್ಯೆಗಳಿಗೆ ಪರಿಹಾರವನ್ನು ಒದಗಿಸುವಂತಿರಬೇಕು ಎಂದು ತಿಳಿಸಿದರು. ಈ ರೀತಿಯ ಅಂತರಾಷ್ಟ್ರೀಯ ವಿಚಾರಸಂಕಿರಣಗಳು ಮೂಡುಬಿದಿರೆಯಂತಹ ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ಆಯೋಜಿಸಬೇಕು ಎಂದು ಅವರು ಸಂಕೇತದ ವಿಚಾರ, ಇಂತಹ ಕಾರ್ಯಕ್ರಮಗಳು

ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳಲ್ಲಿ ಕಠಿಣವಾಗಿರುವ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ದೊಡ್ಡ ವೇದಿಕೆಯನ್ನು ವ್ಯಕ್ತಪಡಿಸಿದರು.

ಮದ್ರಾಸ್ ಐಐಟಿಯ ಡಾ. ಎಮ್.ಎಸ್. ರಾಮಚಂದ್ರರಾವ್, ಬರ್ಮಿಂಗ್ಹಮ್ ಕೊಲೇಜ್‌ನ ಲೇನರಾ ಸ್ಪೆಕ್ಟ್ರಾ ನುರ್ಕಾಡ್ ಫೆಬ್ರವರಿ ಹಾಗೂ ಆಲ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಪ್ರಾಂಶುಪಾಲ ಡಾ.ಪಿ.ಬಿ.ಎಲ್. ಫರ್ನಾಂಡಿಸ್ ಉಪಸ್ಥಿತರಿದ್ದರು. ವಿಚಾರ ಸಂಕಿರಣದ ಆಯೋಜನೆ ಸಮಿತಿಯ ಮುಖ್ಯಸ್ಥ ಡಾ. ರಿಚರ್ಡ್ ಪಿಂಟೋ ಪ್ರಾಧಿಕಾರ.

ಆಲ್ವಾಸ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಲೇಜಿನ ಉಪಾಧ್ಯಕ್ಷ ಶಾನ್ವಿಯಾ ಮಂಡಾ ನಿರೂಪಿಸಿದರು. ವಿಚಾರ ಸಂಕಿರಣದ ಸಂಯೋಜಕ ಡಾ.ಬಯರಾಮ್ ಪಂದಿಸಿದರು.

ವಿಚಾರ ಸಂಕಿರಣದ ವಿಶೇಷತೆ

ಐಐಟಿ ಮದ್ರಾಸ್ ಸಹಯೋಗದೊಂದಿಗೆ ನಡೆಯುತ್ತಿರುವ ಈ ವಿಚಾರ ಸಂಕಿರಣಕ್ಕೆ ಪ್ರೊ.ಆರ್.ಎಂ. ಇಂಜಿನಿಯರಿಂಗ್ ರಿಸರ್ಚ್ ಟೋರ್ನ್, ಭಾರತ ಸರ್ಕಾರದ ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ಇಲಾಖೆ ಹಾಗೂ ಲೇಸರ್ ಪ್ರೊ.ಸರ್ವಿಸ್ ಪ್ರೈ.ಲಿ. ಸಹಕಾರ ನೀಡಿದೆ. ಸಮ್ಮೇಳನವು ವಿಭಿನ್ನ ವೈಜ್ಞಾನಿಕ ಮತ್ತು ತಾಂತ್ರಿಕ ಅವಧಿಗಳನ್ನು ಹೊಂದಿದೆ. ಸಿಎಸ್‌ಆರ್‌ಎಸ್ ಯುಎಂಆರ್, ಫ್ರಾನ್ಸ್ ಕುಮಾರ್‌ಪಿಲಿ ವಿಶ್ವವಿದ್ಯಾಲಯ-ಜಪಾನ್ ಕೇಂದ್ರ ಸಂಸ್ಥೆಗಳಾದ ಐಐಟಿ ಮದ್ರಾಸ್, ಐಐಟಿ ದೆಹಲಿ, ಐಐಟಿ ಕೈರೋ, ಐಐಎಸ್‌ಆರ್-ಪುಣೆ, ಕುಬಾನ್-ಕೊಟ್ಟೈ, ಐಐಎಸ್‌ಆರ್- ಪಿರವನಂತಪುರ, ಡಾಯಿಟ್-ಪುಣೆ, ಎಸ್‌ಐಟಿ ಕ್ಯಾಲಿಫೋರ್ನಿಯಾ, ಎಸ್‌ಐಟಿ ಸುರೇಶ್ ಮುಂತಾದ ಅಂತರಾಷ್ಟ್ರೀಯ ಸಂಸ್ಥೆಗಳ ಪ್ರಸಿದ್ಧ ವಿಜ್ಞಾನಿಗಳಿಂದ 4 ಮುಖ್ಯ ಭಾಷಣ, 3 ಸಮಗ್ರ ಮಾತುಕತೆ ಮತ್ತು 23 ಆಹ್ವಾನಿತ ಉಪನ್ಯಾಸಗಳು ನಡೆಯಲಿದೆ. ಪ್ರಸಂಪದ್ಧಾಂತ್ಯದ ಸಂಕೀರ್ಣದ 70 ಕ್ಕೂ ಹೆಚ್ಚು ಸಂಕೀರ್ಣವಾದ ಪ್ರಬಂಧಗಳು ಮಂಡನೆಗೊಳ್ಳಲಿವೆ.

'Engineers have to look beyond their subjects'

ENS @ MANGALURU

"Engineering has been regarded as a flourishing field. Engineers have to take a peek at activities and pursuits beyond the boundary of their subjects" said Dr. Karanam Umamaheshwar Rao, Director of NITK, Surathkal.

He was speaking after inaugurating a three-day international conference on Laser Deposition: Nanostructure, hetero structure and 2D layers (iCOLD), organised by departments of Electronics & Communication and Mechanical Engineering of Alva's Institute of Engineering and Technology and others.

Alva's Education Foundation Management Trustee Vivek Alva said Alva's Foundation is putting constant effort in interdisciplinary research areas with social relevance. The management is contributing substantially along with funds from various funding agencies, he said.

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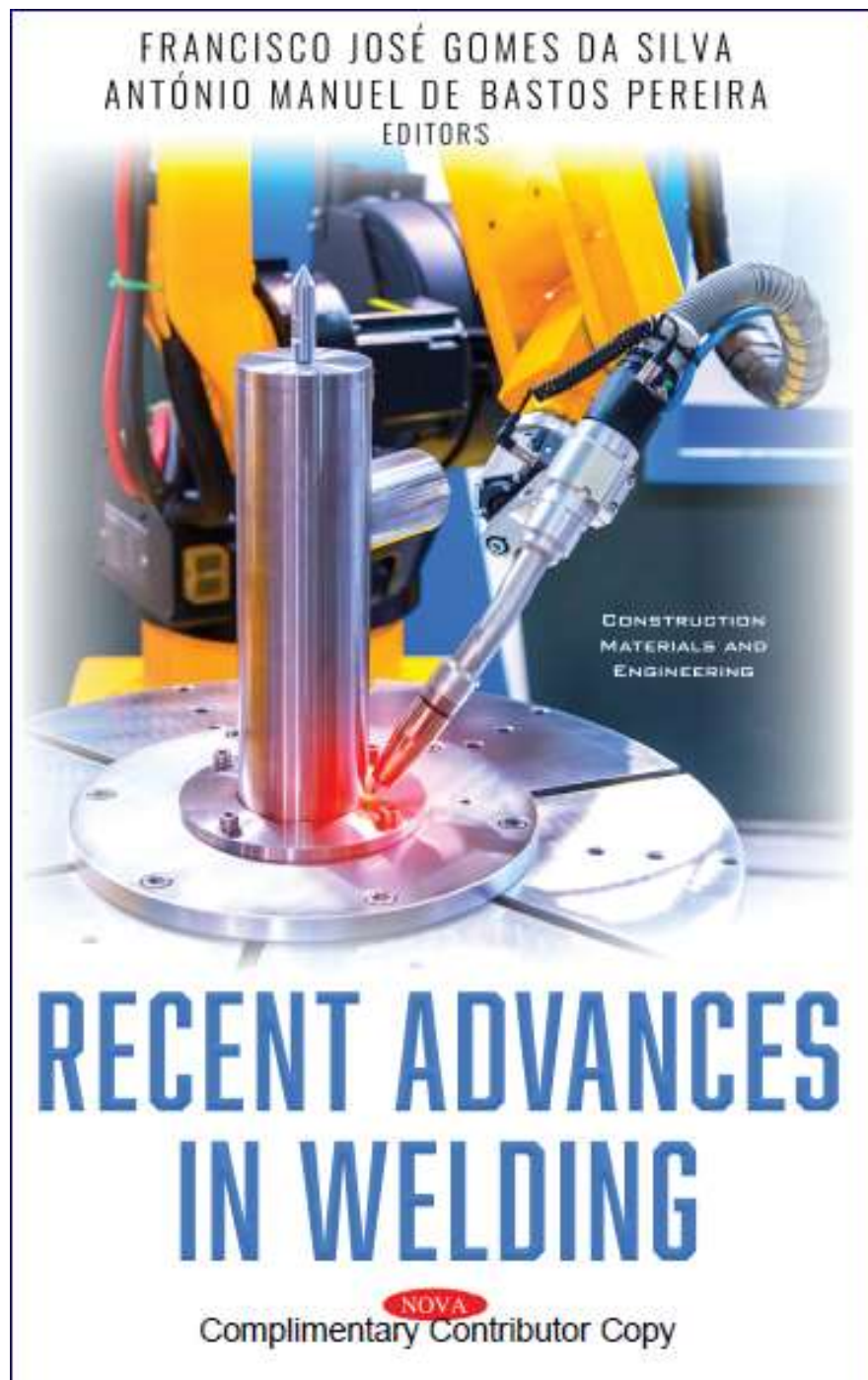
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Book Chapter – Publication



Chapter 9

EXPLOSIVE WELDING OF TIN AND ALUMINIUM PLATES USING UNDERWATER SHOCK WAVE

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ABSTRACT

The present work demonstrates the ability to clad pure tin (Sn) plate on aluminium (Al) plate using underwater shock waves generated by the detonation of explosive. Effect of depth of water i.e., distance between explosive and center of the sample on welded Sn/Al interface was investigated. Depth of water was varied from 30 mm to 60 mm. Evolution of interfacial microstructures of welded Sn/Al joints and their effect on mechanical properties (micro-hardness) was also assessed. Interfacial microstructures indicated that, Sn and Al plates can be successfully bonded using underwater explosive welding technique at depth of water $d = 60$ mm. Increase in the depth of water (50 mm and 60 mm) resulted reduction in the formation of wavy interface. Increase in the values of micro-hardness at the welded interface and gradually decrease in hardness away from the interface was observed.

Keywords: explosive welding, underwater shockwave, Sn/Al, interface, wavy interface

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CONSTRUCTION MATERIALS AND ENGINEERING

RECENT ADVANCES IN WELDING

FRANCISCO JOSÉ GOMES DA SILVA
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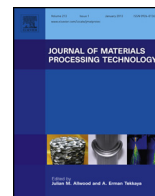
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1. *Using Controlled Underwater Shock Wave*", Journal of Materials Processing Technology, Journal of Materials Processing Technology, Vol 245, July 2017, Pages 300–308. ([Elsevier Publications, IF 4.178](#))
2. **Satyanarayan**, A. Mori and K. Hokamoto "Weldability Windows for Underwater Explosive Welding of Sn and Cu Plates" *Journal of Materials Processing Technology* Volume 267, May 2019, Pages 152-158, ([Elsevier Publications, IF 4.178](#)).
3. **Satyanarayan**, S. Tanaka and K. Hokamoto, "Underwater Explosive Welding of Tin and Aluminium Plate" *Materials Science Forum*, 13 (2019) pp.149-153 (**Trans. Tech Publication, IF 0.35**).
4. **Satyanarayan**, S. Tanaka, A. Mori and K. Hokamoto, " **Book Chapter - Chapter 9 - "Explosive Welding of Tin and Aluminium Plates Using Underwater Shock Wave", Nova Science Publishers (Scopus Indexed), New York, USA, June 2020** (<https://novapublishers.com/shop/recent-advances-in-welding/>)
5. Rahul K P, **Satyanarayan**, S Tanaka and K. Hokamoto "Underwater Explosive Welding of Sn-Ni Plates" (**Under Preparation**)
6. **Satyanarayan**, A. Mori and K. Hokamoto "Underwater shock wave Weldability Windows for Sn-Al Plates" (**Under Preparation**)



Welding of Sn and Cu plates using controlled underwater shock wave



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ARTICLE INFO

Article history:

Received 18 November 2016

Received in revised form 25 February 2017

Accepted 27 February 2017

Available online 1 March 2017

Keywords:

Explosive welding
Underwater shockwave
Sn/Cu
Interface
Intermetallic growth

ABSTRACT

Effect of distance between the explosive and the center of the sample on welded Sn/Cu interface was investigated. Distance was varied to change the pressure applied to the plates to be welded. Morphology of interfacial microstructures across welded Sn/Cu joints and their effect on mechanical behavior was also assessed.

Interfacial microstructures revealed that, Sn and Cu plates can be successfully bonded using underwater explosive welding technique without formation intermetallic phases. Wavy interface was observed at the interface of welded Sn/Cu plates. Increase in the distance between the explosive and sample resulted reduction in the formation of wavy interface. Increase in the values of microhardness at the welded interface and gradually decrease in hardness away from the interface was observed.

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1. Introduction

According to Humpston and Jacobson (2004) soldering is a metallurgical joining technique of two base materials through the use of a third filler metal with a melting point well below those of base materials. The filler metal is known as solder and the process is carried out generally at temperatures below 450 °C. Abtew and Selvadary (2000) stated that Tin (Sn) based solder alloys (Pb containing or Pb-free) are the most common solder materials used in the electronics industry because of their low melting point, better wettability and good mechanical properties. Hwang (2005) reported that, copper (Cu) is widely used in electronic applications as a conductor and substrate material due to its high melting point (1083 °C), thermal conductivity (397 W/mK) and high corrosion resistance. It has an electrical conductivity exceeded only by silver and is lower in cost.

Kumar and Prabhu (2007) clarified that the reaction of a Sn based solder on a substrate is characterized by the degree and rate of wetting and also by the formation of intermetallic compounds (IMCs). The solidification of molten solder on substrate results in perma-

nent bond and the strength of bond is related to the metallurgical reactions between the liquid solder and the base metal.

The review done by Satyanarayan and Prabhu (2011) indicated that, the interaction at the solder/base metal interface results in the formation of intermetallics. These IMCs are responsible for the permanent bond of solder joints. However, intermetallics are brittle in nature. A thick IMC layer at the solder/substrate interface may degrade the reliability of solder joints. Hence, continuous uniform/thin layer of an IMC offers better wettability and excellent joint reliability. However, joining of Sn or Sn based alloys to Cu without formation of intermetallic compounds at interface is very difficult. In the current research, an explosive welding of Sn and Cu plates using the underwater shockwave is proposed.

John and Edward (1993) defined explosion welding (EXW) or bonding as a solid state process for the joining of dissimilar metals in which the welding is accomplished by accelerating one metal plate onto another at extremely high velocity through the use of chemical explosives to create an atomic bond. Hokamoto et al. (1993) and Hokamoto et al. (1995) group stated that, explosive welding technique uses controlled detonations to force dissimilar metals into a high-quality metallurgical bonded joint. This process is generally performed in atmosphere (air). However, Iyama et al. (2001) reported that, traditional explosive welding is found to be unsuitable for the fusing of thin metal plates particularly below 1 mm thickness and also brittle metals or materials such as tungsten, amorphous ribbon and ceramics. According to Sun et al. (2014a, 2014b), a huge explosion force and high temperature generated during explosive welding in air destroys the thin foils. Moreover, explosion in open atmosphere creates significant noise.

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Underwater shock wave weldability window for Sn-Cu plates

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ARTICLE INFO

Associate Editor: C.H. Caceres

Keywords:

Explosive welding
Underwater shock wave
Welding window
Sn/Cu
Interface

ABSTRACT

In this paper, the effects of the heat input and depth of water (d) on the welding interface of tin – copper are discussed using underwater explosive welding technique. An increase in the water depth caused a reduction in the parameters of wavy morphology at the interface. The welding window which certifies the quality of welding was determined for welded Sn – Cu plates based on numerical analysis using AUTODYN – 2D software. The velocity of the flyer plate (V_p) and kinetic energy lost (ΔKE) at the interface was found to be decreased when the increase in water depth was pronounced. The Sn and Cu plates successfully welded using underwater shock wave method under moderate condition, and the experimental parameters were discussed based on the welding window.

1. Introduction

The Explosive welding (EXW) is one of the most widely employed applications of explosives in materials processing. Crossland and Williams (1970) reported that EXW phenomenon was first observed in the First World War where pieces of launched metal projectiles got fused to the other metal surfaces to which they came into contact. Carl, 1944 and Philipchuk, 1965 recognized its commercial values. Since then, many applications for the EXW have been researched and developed. According to Carpenter and Wittman (1975), explosive welding is a solid state process used for the metallurgical joining of similar or dissimilar metals. The welding occurs under high velocity oblique collision of usually metal plates. In the EXW, the flyer plate is accelerated, by detonating of a layered chemical explosive at a high velocity, which then collides obliquely with a stationary base. The EXW is generally performed in an open atmosphere. However, Manikandan et al. (2011) reported that such a method is unsuitable for fusing of tungsten to copper due to the brittle nature of tungsten. According to Iyama et al. (2001) conventional explosive welding always poses a problem for welding of materials, particularly for thin metal plate (below 1 mm thickness) as well as brittle materials such as amorphous ribbon and ceramics. Sun et al., 2014a stated that with traditional air explosive welding, the force of explosion and high temperature at the interface destroys the thin foils. Hokamoto et al. (1998, 1999, 2004,

2009), Mori et al. (2004, 2006a, 2006b, 2014) and Saravanan et al. (2016) concluded that the underwater explosive welding is considered as one of the best welding techniques. In this method, water acts as a pressure transmitting medium. Sun et al. (2014a, 2014b) stated that, density of water is 800 times higher than that of air. Air is around 20,000 times more compressible than water. Hence, water can be considered incompressible. This ensures that the explosion forces do not produce high temperature in water, but allow the water to move forward with the foil material, maintaining their properties. The underwater shock waves prevent the distortion of the welded joint and ensure the integrity of the joints as concluded by Manikandan et al. (2011).

Hokamoto et al. (2004) proposed the underwater explosive welding technique, wherein significant decrease in kinetic energy loss at the interface of flyer plate and base plate was achieved. The use of thin plate can result in achieving high speed over a short distance, but not enough to produce the high energy required for the welding process to maintain their integrity. Thus, underwater explosive welding is considered as one of the best welding techniques to have precision and optimum control on the velocity of the flyer plate and the pressure acting on it to achieve effective fusion.

Dissimilar foil material combinations such as amorphous/stainless steel, metallic glass/stainless steel were welded by Hokamoto et al. (2009). Manikandan et al. (2011) had successfully welded thin tungsten foil to copper plate using underwater explosive welding method. The

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Underwater Explosive Welding of Tin and Aluminium Plates

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Keywords: Underwater Shockwave, Al/Sn, Explosive Welding, interface, Wavy Morphology

Abstract. In the present study, underwater explosive welding of commercial pure Sn and Al plates was attempted. Distance between the explosive and the center of the sample was varied to change the pressure applied to the plates to be welded. Evolution of interfacial microstructures at the welded Sn/Al joints was assessed. An increase in the distance between explosive and the sample exhibited decrease in the formation of wavy morphology at the interface. Cross-sectional interfacial microstructures clearly indicated that, Sn and Al plates can be joined successfully using underwater explosive welding technique.

Introduction

The Explosive welding (EXW) is a solid state process used for the joining (metallurgical) of similar or dissimilar a metal which is regarded as one of the most widely employed materials processing technique [1]. The EXW is generally performed in an open atmosphere. However, it is reported that conventional explosive welding always poses a problem for welding of materials, particularly for thin metal plate (below 1mm thickness) as well as brittle materials such as amorphous ribbon/ceramics and fusing of tungsten (W)/Cu [2,3]. Literature suggested that by using underwater explosive welding a significant decrease in kinetic energy (K.E) loss at the interface of flyer plate and base plate can be achieved [4–6]. In this method, water acts as a pressure transmitting medium. The underwater shock waves prevent the distortion of the welded joint and ensure the integrity of the joints. Hence, underwater explosive welding is regarded as one of the best and novel welding techniques [7, 8]. It reported that, Al/Steel, Al/Cu, Sn/Cu and Cu/Stainless Steel combinations of materials are the most essential in the electrical engineering and among these Al/Cu joints are widely used as electrical connectors in many industries because of their good corrosion resistance and electrical conductivity [9]. Although numerous investigations on explosive welding of various metal combinations were conducted by the researchers [9–12] welding and cladding of Sn and Al using this technique have not been paid attention. Sn based solder alloys are electrically connected with metallic components (most notably the Cu conductors) in the electronic device. However there is no solder alloy in electronic applications which operates with Al in the same way that ordinary solders operate with copper. Because Al does not alloy readily with solders, moreover the Al surface is covered with a thin invisible coating of aluminium oxide. Thin oxide film makes it difficult to join dissimilar materials [13].

Thus, the aim of current study is to make an attempt to fusing of Sn and Al plates using underwater explosive welding method. Further, evolution of interfacial microstructures between welded Sn/Al joint is investigated.

EXPLOSIVE WELDING OF TIN AND ALUMINIUM PLATES USING UNDERWATER SHOCK WAVE

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ABSTRACT

The present work demonstrates the ability to clad pure tin (Sn) plate on aluminium (Al) plate using underwater shock waves generated by the detonation of explosive. Effect of depth of water i.e., distance between explosive and center of the sample on welded Sn/Al interface was investigated. Depth of water was varied from 30 mm to 60 mm. Evolution of interfacial microstructures of welded Sn/Al joints and their effect on mechanical properties (micro-hardness) was also assessed. Interfacial microstructures indicated that, Sn and Al plates can be successfully bonded using underwater explosive welding technique at depth of water $d = 60$ mm. Increase in the depth of water (50 mm and 60 mm) resulted reduction in the formation of wavy interface. Increase in the values of micro-hardness at the welded interface and gradually decrease in hardness away from the interface was observed.

Keywords: explosive welding, underwater shockwave, Sn/Al, interface, wavy interface

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