KSCST

Karnataka State Council for Science and Technology
Indian Institute of Science Campus, Bengaluru - 560 012
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Mr. H. Hemanth Kumar
Executive Secretary

27th March 2019

Ref: 7.1.01/SPP/1333

The Principal,
Alva's Institute of Engineering and Technology,
Shobavana Campus,
Mijar,
Moodbidri - 574 225.

Dear Sir/Madam,

Sub : Sanction of Student Project - 42nd Series: Year 2018-2019
Your Project Proposal Reference No. : 42S_BE_0689

Ref : Your Project Proposal entitled " **DETERMINATION OF OPTIMUM SUBSTRATE THICKNESS TO CONTROL THE DISSOLUTION AND INTERFACIAL REACTION BETWEEN SOLDER/SUBSTRATE INTERFACIAL REGIONS FOR ELECTRONIC APPLICATIONS**

I am happy to inform that your student project proposal referred above, has been approved by the Council for "Student Project Programme - 42nd Series" and has been sanctioned with a budgetary break-up as detailed below:

Student / s	Mr. Bharathesh Hegde and others	**Budget**	**Amount (Rs)**
		Materials/Consumables	6,000.00
Guide/s	Dr. Satyanarayan	Labor	500.00
		Travel	500.00
Department	Mechanical Engineering	Miscellaneous	500.00
		Report	500.00
		TOTAL	8,000.00
	EIGHT THOUSAND RUPEES ONLY		

The following are the guidelines to carryout the project work :

a) The project should be performed based on the objectives of the proposal sent by you.

b) The project should be completed in all respects and one copy of the hardbound report along with softcopy of the full report in a CD (.pdf format) should be submitted to KSCST.

c) Any change in the project title and objectives, etc., or students is liable to rejection of the project and the amount sanctioned needs to be returned to KSCST.

d) Please quote your <u>project reference number printed above</u> in all your future correspondences.

e) **Important:** After completing the project, 2 to 3 page write-up (synopsis) needs to be sent by e-mail [spp@kscst.iisc.ernet.in] and should include following :

1) Title of the project
2) Name of the College & Department
3) Name of the students & Guide(s)
4) Keywords

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

VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELAGAVI 590018

A project report on

DETERMINATION OF OPTIMUM SUBSTRATE THICKNESS TO CONTROL THE DISSOLUTION AND INTERFACIAL REACTION BETWEEN SOLDER/SUBSTRATE INTERFACIAL REGIONS FOR ELECTRONIC APPLICATIONS

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

By

AKASH	4AL15ME007
BHARATHESH HEGDE	4AL15ME023
DIVAKAR K M	4AL16ME409
HARSHA RAJ	4AL14ME031

Under the Guidance of

Dr. Satyanarayan

Associate Professor

Department of Mechanical Engineering

ALVAS INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOODBIDRI-574225, KARNATAKA

2018 – 2019

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mijar, Moodbidri D.K. -574225 – Karnataka

DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

DETERMINATION OF OPTIMUM SUBSTRATE THICKNESS TO CONTROL THE DISSOLUTION AND INTERFACIAL REACTION BETWEEN SOLDER/SUBSTRATE INTERFACIAL REGIONS FOR ELECTRONIC APPLICATIONS

Certified that the project work entitled "is a bona fide work carried out by

AKASH	**4AL15ME007**
BHARATHESH HEGDE	**4AL15ME023**
DIVAKAR K M	**4AL16ME409**
HARSHA RAJ	**4AL14ME031**

are bonafide student of Mechanical Engineering Alva's Institute of Engineering and Technology in partial fulfillment for the award of BACHELOR OF ENGINEERING in **MECHANICAL ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2017–2018. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Dr. Satyanarayan **Project Guide**	**Dr. Harishanand K S** **Head of the Department**	**Dr.Peter Fernandes** **Principal**

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

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

Name of the Examiners

1. Sharath Chandrappa

2. Dr TK Chandrashekar

Signature with Date

13/6/19

TK Chandrashekar

13/6/19

ABSTRACT

Soldering is widely used in various levels of electronic packaging to join components. Tin is a major ingredient in many electronic solders, both lead-bearing and lead-free. Copper is the most common substrate material to be in direct contact with solders. Therefore, the reaction between Sn and Cu is of great practical interest. Reaction between solid Cu and liquid tin (Sn) was evaluated. All the substrate specimens were immersed (dipped) in molten Sn for duration of 3mins at a speed of 2.5mm/s by using a motor and drawn out from the liquid tin at a speed of 2.5 mm/s. The temperature of liquid Sn maintained was 350^0C. An interfacial reaction between solid metals in liquid tin and vice versa was investigated. (An increase in intermetallic layer with increasing immersion time was observed. The evolution of microstructure and formation of intermetallic compounds at the interface was assessed using metallurgical microscope.)

Keywords: Tin, molten liquid, base metal, substrate, alloy, intermetallic