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DN 052158

**Memorandum of Understanding**  
between

Agappe Diagnostics Ltd, Pattimattom, Ernakulam

and

SCMS Group of Educational Institutions, Cochin

This Memorandum of Understanding (hereinafter referred to as MoU) is made on the 29<sup>th</sup> Day of September 2022 between,

M/s. Agappe Diagnostics Limited (CIN No.U24239MH1998PLC115413), a Company duly incorporated and existing under the laws of India whose registered office at Office No:401 & 402, Jaisingh Business Centre, Sahar Road, Andheri(East), Mumbai, Maharashtra, India – 400099 and Corporate office at Agappe Hills, Pattimattom (PO), Dist. Ernakulam, Kerala -683 562, India+; hereafter referred to as "Agappe" on one part and, SCMS Group of Educational Institutions, Cochin. mentioned hereafter as "Institute" on the other part as partners.

Whereas Agappe is a fast-growing company in the field of Invitro Diagnostics and Institute is a leading educational institute.

No. 15486 Date 22.9.22 Rs. 100/-  
Sold to: Jomel Joseph  
Shanmugan Kuzhijy (H)  
Mullakkanam



P.C. Nirmala, Stamp Vendor, Puthencra

Dr Rag R L



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DN 052103

WHEREAS both Agappe and Institute (hereinafter called 'Parties') desire to carry out programmes for promoting Medical-Engineering interaction, herein referred to as "Programme", jointly with the diligence and efficiency as desired within this MoU in conformity with appropriate administrative, financial and educational practices and implement all such plans, activities and reforms as required for the Programme.

WHEREAS Agappe and Institute agree to enter into a MoU with the terms and conditions as follows.

### OBJECTIVES

The major objectives for which the parties associate with each other are:

- To facilitate academic interactions among stakeholders of both Parties.
- To provide training by relevant experts from Agappe and thereby strive to improve the technical competency of eligible undergraduate and post graduate students of the Institute.
- To share ideas and implement methods, for product development activities through project guidance and technological support from Agappe

No. 15208 Date: 22-9-22 Rs. 100

Sold to: Agappe Diagnostics Ltd, Pattimattom



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Dr Rag R L

- d. Collaborate to share and exchange information between both parties for mutual benefit and technology enhancement.
- e. Strive to provide Placement and internship opportunity to the eligible undergraduate and postgraduate students of the Institute.

## **THE PROGRAMME**

The Parties have agreed to execute this MoU for Collaboration with the primary objective of providing training to the students on Agappe products and services and certain soft skills.

The primary focus will be to provide training, project guidance, internship, and limited placement support at free of charge.

This MoU is to formalize joint programmed activities that will help to establish a mutually beneficial relationship built on academic, scientific, and technological cooperation which include organizing workshops, conferences, collaborative research, hackathons, project guidance, internship, training programs, industry-institution interface as may be mutually agreed between the parties.

## **FACULTY EXCHANGE AND CONSULTANCY**

It is highly encouraged to share the skills and expertise of both the parties for mutual benefit. Sharing Institute's Engineering domain expertise as well as Agappe Research & Development domain expertise will help both the parties to create a innovative culture. This may result in development of several Indigenous Healthcare affordable solutions.

## **NON-DISCLOSURE OF CONFIDENTIAL INFORMATION**

The Parties shall keep all the information shared in terms of this Agreement as confidential

All intellectual property rights of Agappe including such technological innovations developed during the course of the program shall be vested with them as being its owners or their licensors wherever the context applies. The faculty and students of Institute who get the opportunity to obtain exposure to the intellectual knowhow of Agappe shall not disclose the same by any means and it shall be the responsibility of Institute to ensure the same.



*Dr. Bag R*

Both the parties shall exclusively own and continue to retain all rights and title to its trade name/s, trademark/s and logo/s and nothing contained herein is intended to assign or transfer any of the said rights in the trade names/trademarks and logo/s to the other Party.

### **INDEMNITY**

Both parties hereby indemnify and shall keep indemnified and protected the other party and their respective officers and employees from and against any claims or actions arising out of or in any way relating to the provision and implementation of the Programme as per this MoU.

### **DURATION**

This MoU will be active for a period of Three Years from 1<sup>st</sup> October 2022, the date of this MoU. It will be extended for a further period by mutual consent after evaluating the activities conducted.

### **TERMINATION**

Either party has the right to terminate this MoU by giving ninety days written notice to the other party.

### **JURISDICTION**

In the event of any dispute arising out of this MoU, the parties agree that the courts of Ernakulam, Kerala alone will have jurisdiction.

The two parties of this MoU agree to act in good faith and in a spirit of mutual understanding and accommodation to facilitate the achievement of goals set under the Programme.



  
Dr Rag R L

# Redesigning of valve system in 3-part hematological analyzer

A PROJECT REPORT

Submitted by

ASWIN SURENDRAN SCM19ME016

ATHUL M SCM19ME017

SANDEEP BIJU SCM19ME040

SANJAY T J SCM19ME043

to

the A P J Abdul Kalam Technological University

in partial fulfillment of the requirements for the award of the Degree

of

Bachelor of Technology

In

Mechanical Engineering



DEPARTMENT OF MECHANICAL ENGINEERING  
SCMS SCHOOL OF ENGINEERING AND TECHNOLOGY

KARUKUTTY

DECEMBER 2022



DEPARTMENT OF MECHANICAL ENGINEERING  
SCMS SCHOOL OF ENGINEERING AND TECHNOLOGY  
KARUKUTTY  
2022 - 2023



CERTIFICATE

This is to certify that the report entitled **Redesigning of valve system in 3-part hematological analyzer** submitted by **Aswin Surendran, Athul M, Sandeep Biju, Sanjay T J**, to the APJ Abdul Kalam Technological University in partial fulfillment of the B.tech. degree in Mechanical Engineering is a bonafide record of the project work carried out by him/her under my/our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

**Project Coordinator**

Dr. Vidya Chandran  
Mr. Francis Thomas  
Assistant Professor  
Dept. of Mechanical Engineering  
SCMS School of Engineering  
and technology, Karukutty

**Project Guide**

  
05.01.2023  
Dr. Rag R L  
**Head of Department**  
Dept. of Mechanical Engineering  
SCMS School of Engineering  
and technology, Karukutty



Dr Rag R L

### Abstract

Impedance technology was a revolution in the history of Hematology. Mispa Count X is the first indigenous 3-part hematology analyzer in India, which works on the principle of impedance technology. The analyzer produces the measurement results of 18 parameters with throughput of 60 samples per hour. Mispa Count X was compared with benchmark analyzers Coulter DxH 800 and Sysmex XN 1000 to validate its performance. The working of the device relates to a unique method and device for blood sample dilution in hematology analyzers. Before starting an analysis, a hematology cell counter must be diluted precisely defined volume of whole blood sample with a dilution reagent. This dilution process must be repeatable with an extremely high performance and dilution ratio. In most cases used so-called shear valves to make very precise blood volume cuts. However, these components in the hematology systems are usually extremely costly and issue a much higher complexity on the system in many ways. This project is thus a investigative study to investigate a new passive abrasion mechanism and method so-called "shear block", which could replace current rotary valves in Boule's current one hematology system. This method has many advantages such as lower cost, simplified mechanism, flexibility in the face of integration with microfluidic systems and that fewer complex control systems and equipment, which reduces calibration and maintenance needs. The hypothesis for this study is therefore that the Shear Block dilution method is only affected of blood viscosity.

  
Dr Rag R L



Raghav G R &lt;raghavgr@scmsgroup.org&gt;

**Fwd: Internship - Agappe Diagnostics Ltd**

2 messages

**Dr. Rag R.L.** <rag@scmsgroup.org>  
To: Raghav G R <raghavgr@scmsgroup.org>

Wed, Jan 18, 2023 at 11:46 AM

**Dr. Rag R. L.**

Professor &amp; Head, Department of Mechanical Engineering



SCMS School of Engineering & Technology  
Karukutty - 683 582.  
Phone: 0484 2450330 | Mob: 9446941654  
website: <https://scmsgroup.org/sset/>  
email: [rag@scmsgroup.org](mailto:rag@scmsgroup.org)

On Thu, Nov 17, 2022 at 1:16 PM Remya Stephen <[remya.stephen@agappe.in](mailto:remya.stephen@agappe.in)> wrote:

Dear Sir,

This is w.r.t our discussion yesterday regarding the internship of 4 students from SCMS (Mr. Athul M, Mr. Aswin Surendran, Mr. Sanjay T J, Mr. Sandeep Biju) in the R&D Equipment division at Agappe Diagnostics Ltd. As discussed, please find below the documents required to be submitted at the time of their onboarding. Request you to kindly communicate the same to them.

1. Adhar card copy
2. PAN card copy
3. 1 passport size photo
4. Bonafide certificate from college

Also, please let us know if it would be okay for them to start their internship on 21/Nov/2022.

Regards,

Remya Stephen

HR

Agappe Diagnostics Ltd

9745314444

Dr Rag R L

\*This message (including any attachments) is intended only for the use of the individual or entity to which it is addressed and may contain information that is non-public, proprietary, privileged, confidential, and exempt from



disclosure under applicable law or may constitute as attorney work product. If you are not the intended recipient, you are hereby notified that any use, dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, notify us immediately by telephone and (i) destroy this message if a facsimile or (ii) delete this message immediately if this is an electronic communication. Thank you\*

**Dr. Rag R.L.** <rag@scmsgroup.org>  
To: Raghav G R <raghavgr@scmsgroup.org>

Wed, Jan 18, 2023 at 11:48 AM

**Dr. Rag R. L.**

Professor & Head, Department of Mechanical Engineering



SCMS School of Engineering & Technology  
Karukutty - 683 582.  
Phone: 0484 2450330 | Mob: 9446941654  
website: <https://scmsgroup.org/sset/>  
email: [rag@scmsgroup.org](mailto:rag@scmsgroup.org)

----- Forwarded message -----

From: **Remya Stephen** <[remya.stephen@agappe.in](mailto:remya.stephen@agappe.in)>  
Date: Sun, Nov 20, 2022 at 3:36 PM  
Subject: RE: Internship - Agappe Diagnostics Ltd  
To: Dr. Rag R.L <[rag@scmsgroup.org](mailto:rag@scmsgroup.org)>  
Cc: Sujith P S <[sujith.ps@agappe.in](mailto:sujith.ps@agappe.in)>, Vineeth P Mathew <[vineeth.mathew@agappe.in](mailto:vineeth.mathew@agappe.in)>, Varghese Ouseph <[varghese.ouseph@agappe.in](mailto:varghese.ouseph@agappe.in)>

Dear Sir,

Noted. Please take this as a confirmation from our end regarding the same. The starting date for their internship would be 22/Nov/2022 (Tuesday). Please inform the students to report at our Corporate Office at Pattimattom on 22/Nov by 8.30 am. Please ask them to carry the below mentioned documents also.

1. Adhar card copy
2. PAN card copy
3. 1 passport size photo
4. Bonafide certificate from college

Regards,

Remya Stephen

HR

Agappe Diagnostics Ltd

9745314444

Dr Rag R L

**From:** Dr. Rag R.L <[rag@scmsgroup.org](mailto:rag@scmsgroup.org)>  
**Sent:** 19 November 2022 14:48

**To:** Remya Stephen <[remya.stephen@agappe.in](mailto:remya.stephen@agappe.in)>  
**Subject:** Re: Internship - Agappe Diagnostics Ltd

Dear Madam,

Since the students are having examinations, 22-11-2022 will be convenient. Kindly do the needful.

With regards,

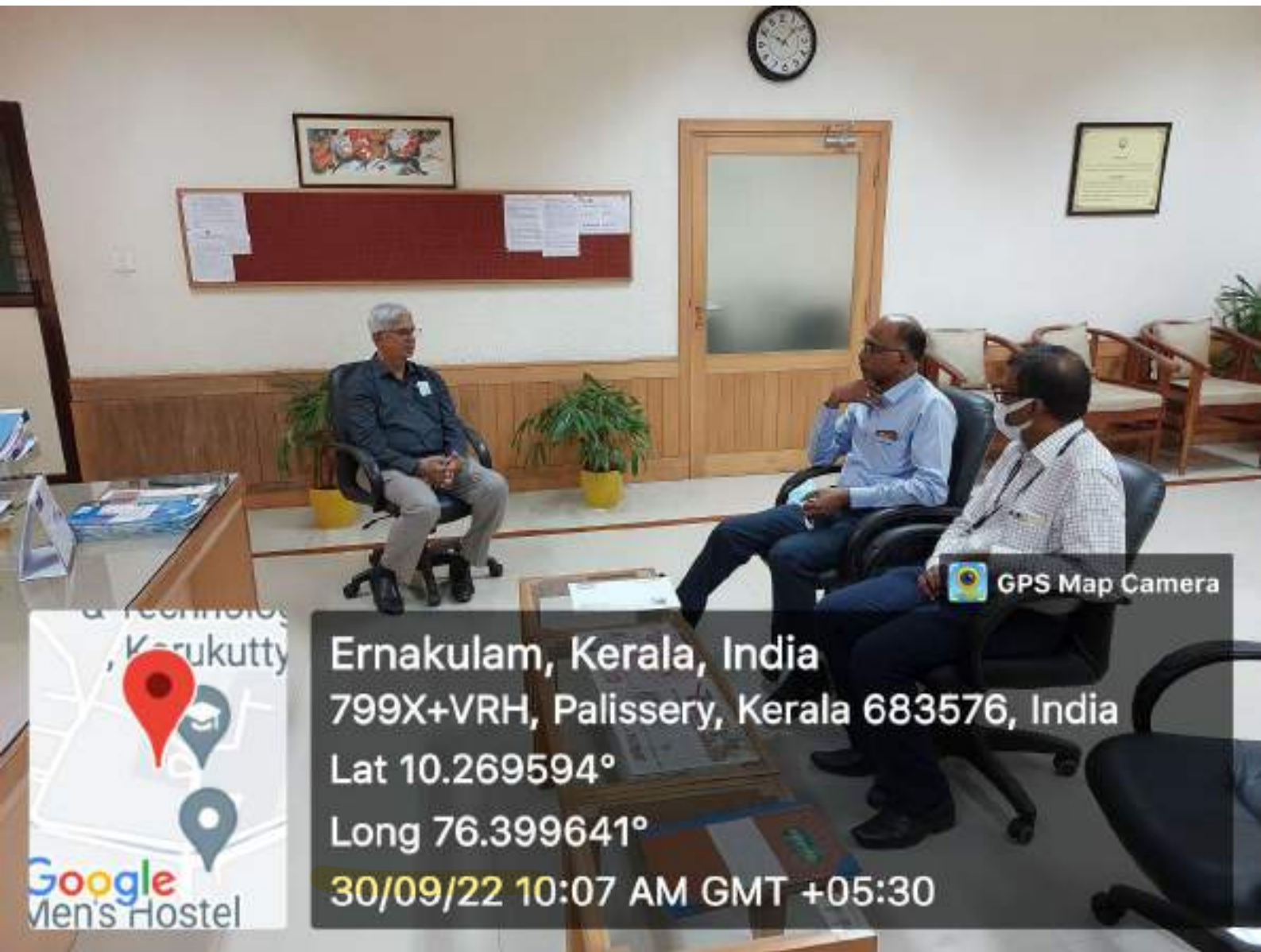
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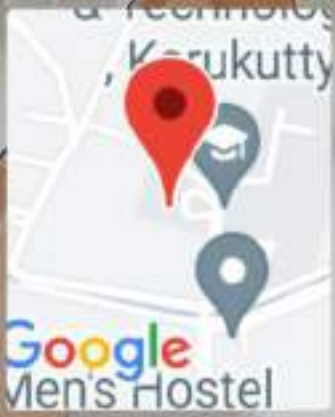


*Dr Rag R L*

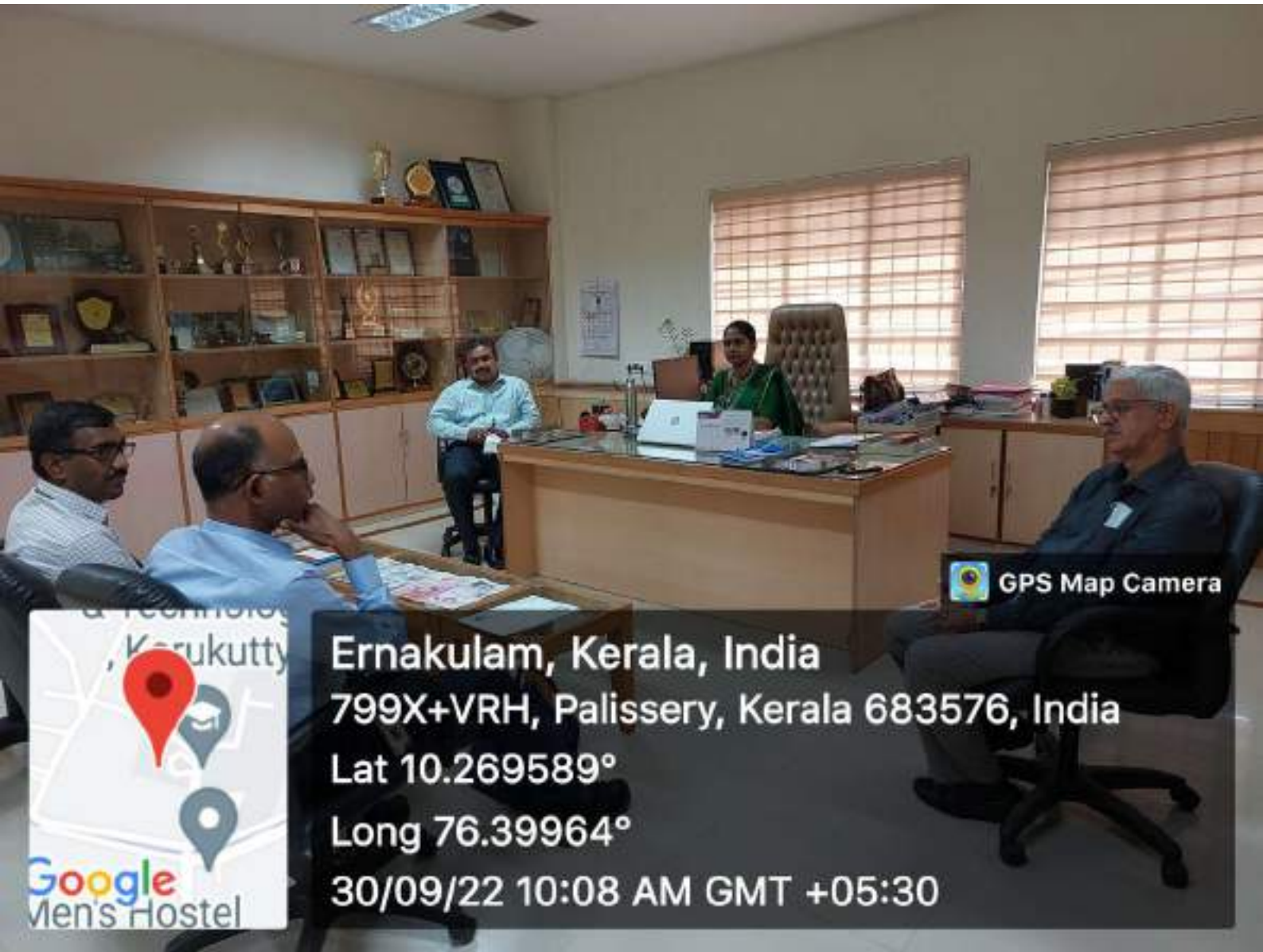



GPS Map Camera

Ernakulam, Kerala, India  
799X+VRH, Palissery, Kerala 683576, India  
Lat 10.269594°  
Long 76.399641°  
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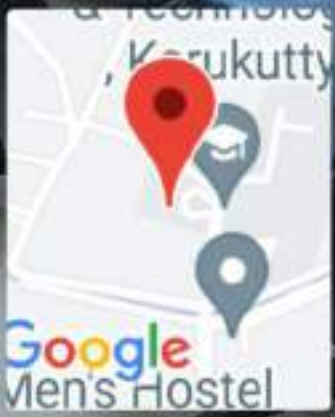


*Dr Rag R L*

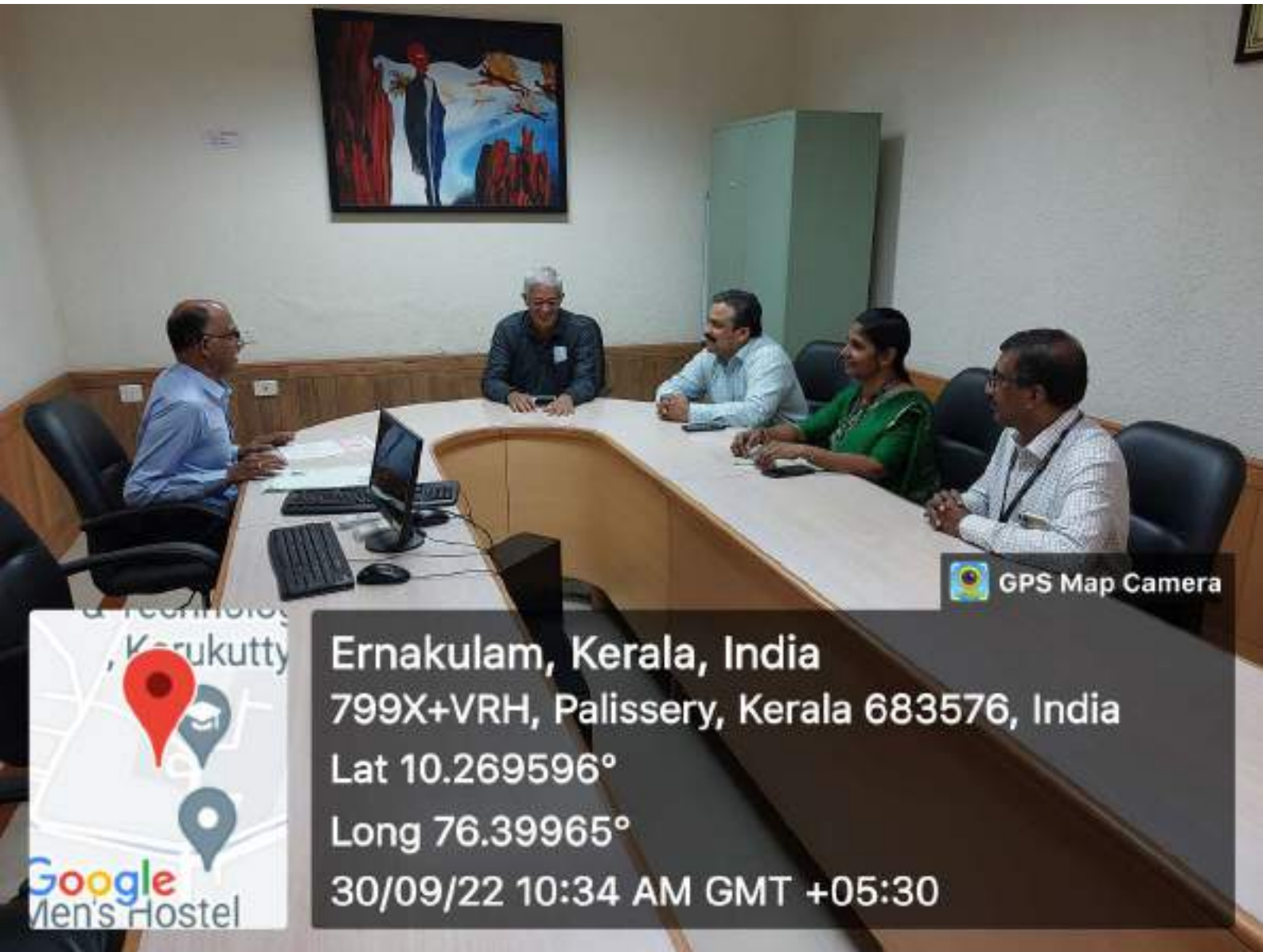


 GPS Map Camera

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Long 76.39964°  
30/09/22 10:08 AM GMT +05:30



  
Dr Rag R L



GPS Map Camera



Ernakulam, Kerala, India

799X+VRH, Palissery, Kerala 683576, India

Lat 10.269596°

Long 76.39965°

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Dr Rag R L

# SSET

welcomes



**Varghese N. Ouseph**  
Associate Vice-President  
Agappe Diagnostics Ltd.

**AGAPPE**

30-09-2022



**SSET** SCMS SCHOOL OF  
ENGINEERING AND TECHNOLOGY

Campus: Vidya Nagar, Karukutty, Ernakulam - 683576 Kerala

Website: [www.smsgroup.org/sset](http://www.smsgroup.org/sset) Tel: 0484 2882900/0484 2450330

— Accredited by —



*Dr Rag R L*